Attracting Early Stage and Cross Border Venture Capital in the Biotechnology Sector: Showcase Your Value to Investors

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Summary

Title Attracting Early Stage and Cross Border Venture Capital in the Biotechnology Sector: Showcase Your Value to Investors

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Problem statement Biotechnology companies are characterized by long development and capital intensive processes, which includes certain risks throughout the development chain. When attracting investments from VC funds, specific portfolio strategies and evaluation criteria drive the decision making for investors, and biotechnology companies can face significant challenges in knowing what investors seek. Also, due to the global attributes of the biotechnology sector, cross border VC funding commonly leads to additional challenges. Therefore, early stage biotechnology companies can face difficulties to fully understand what evaluation criteria international VC funds use, as well as how they can successfully meet the criteria by balancing their value creating activities.

Purpose Identify specific evaluation criteria, which VC funds use to assess early stage and cross border ventures in the biotechnology sector.

Method A systematic combining research design is used, which incorporates an abductive approach with qualitative case studies. Data is collected from semi-structured interviews with venture capital investors and biotechnology company representatives. The qualitative data will be analysed using an inductive, as well as a deductive approach.

Conclusions The findings support criteria related to the team, product, market, finance, and other cross border aspects, which are originally derived from and supported in existing literature. The research criteria are further specified by themes and patterns. The only inconclusive criteria from literature, related to knowledge networks.

Keywords Venture capital, biotechnology, cross border investments, evaluation criteria
“Venture capitalists would rather invest in a grade A team with a grade B idea, than in a grade B team with a grade A idea.”

Nikolaus Franke
Biotechnology companies are characterized by long development and capital intensive processes, which includes certain risks throughout the development chain. When attracting investments from VC funds, specific portfolio strategies and evaluation criteria drive the decision making for investors, and biotechnology companies can face significant challenges in knowing what investors seek. Also, due to the global attributes of the biotechnology sector, cross border VC funding commonly leads to additional challenges. Therefore, early stage biotechnology companies can face difficulties to fully understand what evaluation criteria international VC funds use, as well as how they can successfully meet those criteria by balancing their value creating activities. Cross border VC funding is especially important for the biotechnology sector in Skåne and Sweden, due to limited access to local capital. Although existing literature provides insight to evaluation criteria for venture capitalist, there is limited literature which incorporates industry specific evaluation criteria related to biotechnology and cross border aspects. Therefore, this study attempts to research the evaluation criteria used for cross border investments in the biotechnology sector. A systematic combining research design is used, where qualitative data is collected from semi-structured interviews with seven international venture capital investors and seven biotechnology representatives. The findings support criteria related to the team, product, market, finance, and other cross border aspects, which are derived from and supported in existing literature. The evaluation criteria are further specified by identified themes and patterns to provide insights for early stage biotechnology companies engaged in attracting Venture Capital.
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Best regards from the southernmost part of Sweden,

Elin Alm and Givi Kokaia
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Chapter 1

Introduction

1.1 Background

The southernmost part of Sweden, Skåne, holds a fruitful research infrastructure, with several high technology companies and start up initiatives within various industries. The life science industry in Skåne is a prominent example, which includes products and services driven to meet specific medical needs (Vinnova, 2014). The attractiveness of the business region related to life science, has led to a collaborative environment across the Öresund, also known as Medicon Valley. As an attractive innovative arena, the financial aspects related to innovation are integrated, where Venture capital (VC) has a significant part for developing new start up initiatives in high technology industries (Behrens, 2012).

In Sweden, as well as in Skåne, there is a positive infrastructure for the earliest financing initiatives, also known as seed capital. However, when companies transition into later stages of maturity, the demand for VC and other financing sources may rise significantly above the financial support from private and governmental investors offering seed capital.

In Sweden there are primarily two larger VC firms financing early stage companies, which leads to certain restraints for capital intensive industries. Hence, capital demands from other geographical regions can arise (Vinnova, 2014).

Invest in Skåne is the official business promotion agency in Skåne, with goals to provide business opportunities for companies within the region. A major objective of the agency, and the Life science department of Invest in Skåne, is to connect regional businesses with international investors. Within the life science industry, there is a practical gap between certain biotechnology companies and international VC funds. The practical gap relates to the interaction with VC investors, where it is challenging to know what VC investors seek during cross border ventures in the biotechnology sector. Also, due to the risks associated with biotechnology, VC funds can be wary of investing in biotechnology
companies. In collaboration with the life science department at Invest in Skåne, the following study is geared towards understanding the interaction between biotechnology companies and VC investors, by researching what international VC funds seek during cross border investments in the biotechnology sector.

1.1.1 The life science industry and biotechnology sector

The life science industry has had a prominent tradition for impacting several industries, laws, regulatory procedures, and overall global environment by developing groundbreaking medical drugs, as well as medicine technical products (Ranade, 2008). Although life science can be categorized in various ways, this study incorporates a categorization used in the Global trends with local effects report by the Swedish innovation agency Vinnova (2014). In the report, the life science industry is divided into three sectors, referred to as, medical technology, biotechnology, and pharmaceutical (Vinnova, 2014). Each sector is highlighted as followed:

“The characteristics of companies falling into the medical technology sector are that they develop medical products that are not drugs. The characteristics of companies falling into the pharmaceutical sector are that they develop drugs and various kinds of therapeutic products or methods. The biotechnology sector is characterised by companies developing the application of science and technology to living organisms as well as parts, products and models thereof, to alter living or nonliving materials for the production of knowledge, goods and services” (Vinnova, 2014, pp 17).

Biotechnology is considered to be “one of the key technologies of the 21st century”, as well as, “one of the most knowledge- and research intensive industries”, due to its high growth and innovation attributes (Jung et al., 2011, pp 4). The development activities for biotechnology companies, compared to medical technology companies, can have longer and more capital-intensive activities. The procedures can take around 10-12 years to complete, and average $2,5 billion in capitalized costs per market approved drug (Tufts, 2014; FASS, 2014). These are results from strictly regulated activities, where candidates have to be channeled through several trial phases and tollgate approvals along the development chain (FASS, 2014). The demand for capital also increases throughout the chain, where research moves from discovery of the new entity, to pre-clinical animal testing, and lastly clinical studies on thousands of individuals. If the candidates pass all the different phases of research, a market approval will be required to initiate a product launch (see Figure 1.1) (Jung et al., 2011).
1.1.2 Venture capital (VC) funds

VC funds can range from large corporations, making equity investments in small businesses, to a group of individuals who come together and invest in a startup (Gladstone and Gladstone, 2002). In most cases, VC funds are structured as independent funds, which include General Partners (GP), who manage the funds, and Limited Partners (LP), who provide capital for the funds (Metrick and Yasuda, 2010; Gladstone and Gladstone, 2002). The funds are usually constructed during a finite lifetime, where the limited partners typically provide a certain amount of capital on a predefined schedule (Metrick and Yasuda, 2010). The limited partners include institutional investors, “such as pension funds, university endowments and large corporations” (Metrick and Yasuda, 2010, pp 21), or in certain cases insurance companies and wealthy individuals (Metrick and Yasuda, 2010; Gladstone and Gladstone, 2002). The investors may also be passive or active within their venture capital investments. Passive investors might require frequent updates, but are rarely involved in the business aspects, while active investors are equity oriented and will be heavily involved and serve on the board of the company (Bottazzi et al., 2008).

1.1.2.1 VC strategies and evaluation criteria

VC funds can also have different portfolio strategies, in terms of specific development stages of a company, geographic locations or industries (Metrick and Yasuda, 2010; Gladstone and Gladstone, 2002). Metrick and Yasuda (2010, pp 21) explain that “an early stage fund would make initial investments in early stage companies, with capital reserved to make follow-on investments in these companies in their later stages”, while late stage funds primarily focus on companies in expansion stages and overall late stage
investments. Although VC can be offered in various stages, most VC funds only start offering capital during early stage funding (Ranade, 2008; MyCapital, 2014). Geographical strategies for VC funds can be rather unclear to interpret, as certain researchers claim that much of the VC activity is local (Metrick and Yasuda, 2010), while other researchers claim that the trend of cross border investments seem to be increasing and VC funds are far from restricted to local or regional investments (Tarrade, 2012; Aizenman and Kendall, 2012). In relation to preferred industry focus, there are many generalist funds willing to invest in various sectors, while other funds will incorporate a specific focus in their investments (Metrick and Yasuda, 2010).

According to Franke (2008), VC funds also have certain evaluation criteria for new ventures, where studies within the topic have been traced back to early 1970s. There are several research initiatives, which aim to understand the evaluation criteria during new ventures, and over the past decades a number of generic evaluation criteria have seemed to hold true (Franke, 2008; Koller et al., 2010; Nunes et al., 2014). The generic evaluation criteria have also been applied to specific sectors, such as biotechnology (Baeyens et al., 2006; Ranade, 2008; Jung et al., 2011). Small traces of evaluation criteria have also been seen in literature related to international investments (Wright et al., 2005), but these efforts are limited. Therefore, when companies seek capital from international VC funds, the awareness of VC strategies and VC evaluation criteria should be important to consider (Gladstone and Gladstone, 2002).

### 1.1.3 Venture capital investments in biotechnology

During the past four decades, there has been a continual spending increase in global biotechnology research; however, growth within the industry has been limited in the number of approved therapeutic drugs brought to the market (Coller and Califf, 2009). Due to the risks associated with the biotechnology development activities, only one in five thousand compounds from preclinical stages actually reach the phase of testing in humans, which indicates the difficulty in driving a product from initial research to market (Jung et al., 2011). The cause can be related to the inability for early stage biotechnology companies to raise the necessary capital to drive a project forward (Miller, 2009). The phenomenon, which has attracted significant attention over the years, is commonly referred to as the Valley of Death (Coller and Califf, 2009).

For early stage companies seeking capital, the key principle lies in the ability to “create value by investing capital they raise from investors to generate future cash flows”, where “the simple combination of growth and return on invested capital, relative to its cost, drives value” (Koller et al., 2010, pp 4). According to Koller et al. (2010, pp 3), the
Chapter 1. *Introduction*

The concept of value is viewed as a “helpful measure of performance”, and incorporates all stakeholder interests. More importantly, the concept incorporates long term and broad interests of a specific company and is highly linked to investments. Therefore, when seeking capital, biotechnology companies should try to communicate the total value of a project (Franke, 2008).

In many cases, biotechnology companies seek capital from VC funds MyCapital (2014), which have contributed significantly to financing the biotechnology sector (Ranade, 2008). However, due to certain risks associated with biotechnology, as well as the specific strategies and evaluation criteria among VC funds, it can be a challenging task for early stage biotechnology companies to attract VC. These challenges may be heightened due to the global attributes of the biotechnology sector, where cross border investments are common. Overall, the interaction between biotechnology companies and VC funds can be rather strenuous, where biotechnology executives frequently express challenges in the amount of time required and the difficulty of raising capital (Rhyne, 2009).

1.2 Problem statement

Biotechnology companies are characterized by long development and capital intensive processes, which includes certain risks throughout the development chain. When attracting investments from VC funds, specific portfolio strategies and evaluation criteria drive the decision making for investors, and biotechnology companies can face significant challenges in knowing what investors seek. Also, due to the global attributes of the biotechnology sector, cross border VC funding commonly leads to additional challenges. Therefore, early stage biotechnology companies can face difficulties to fully understand what evaluation criteria international VC funds use, as well as how they can successfully meet those criteria by balancing their value creating activities.

1.3 Purpose

The purpose of the study is to identify specific evaluation criteria, which VC funds use to assess early stage and cross border ventures in the biotechnology sector.

1.4 Research questions

In order to meet the specific purpose of the study, the following research questions will serve as guidelines throughout the study:
1. What are the industry specific, and cross border evaluation criteria, which VC funds use for the biotechnology sector?

2. How can biotechnology companies balance their activities to successfully attract international venture capital?

1.5 Process of the study

![Diagram of the study process]

Figure 1.2: Schematic image of the study process (Source: authors illustration)

Figure 1.2 presents a process overview of the study. The process includes an introduction chapter with a general overview of the topic, problem statement and overall purpose. The methodology chapter includes a discussion regarding the research design, data collection, analysis and limitations of the study. The literature review includes the selected literature related to evaluation criteria and creates a theoretical framework which is used for the interviews. The next chapters are derived from the chosen analysis method, which includes an inductive analysis of the practical interviews, and a deductive analysis of the concluding and deviating results from the inductive chapter. The inductive analysis chapter provides a synthesized collection of interview findings, which are categorized into the evaluation criteria, themes and patterns. The deductive analysis chapter presents
all the concluding and deviating results from the inductive analysis, in order to narrow
down the gathered data into presentable findings. The discussion includes a presenta-
tion of the final findings, as well as a discussion linked back to the purpose, limitations,
contributions and potential future approaches for the study. The last chapter includes
the concluding remarks of the study.
Chapter 2

Methodology

2.1 Research design

As the following study aims to research evaluation criteria among VC funds, by gaining a deeper understanding of experiences among industry professionals, a qualitative approach will be used. Specifically, the study will make use of a research design referred to as Systematic Combining, which fundamentally involves an abductive approach with qualitative case studies incorporated.

2.1.1 Qualitative case studies

The following study will include qualitative case studies. Creswell (2013) expresses that qualitative research includes meanings of social and historical individual experiences, to develop a pattern and/or perspectives which include personal experiences. Within qualitative research designs, researchers believe that qualitative case studies offer “the most interesting research opportunities” (Dubois and Gadde, 2014, pp 1). According to Eisenhardt (1989, pp 4), “the case study is a research strategy which focuses on understanding the dynamics present within single settings”, and in most cases, researchers use various sources for their data collection (Creswell, 2013). In case studies, inductive approaches are more relevant, as the “strength of theory building from cases is its likelihood of generating novel theory” (Eisenhardt, 1989, pp 16).

In practice however, scholars believe that research processes can be complicated (Dubois and Gadde, 2014), where deductive and inductive approaches are often combined (Creswell, 2013). A mixing between approaches, is also called an abductive approach (Dubois and Gadde, 2014), where “some evaluation or research questions may be determined deductively, while others are left sufficiently open to permit inductive analyses based on direct
observations” (Patton, 2002, pp 55). According to Dubois and Gadde (2014) abductive characteristics are hidden in research papers, and earlier research also explains that “most great advances in science neither followed the pattern of pure deduction nor of pure induction” (Spens and Kovacs, 2006, pp 4). Dubois and Gadde (2002), argue that the interplay between deductive and inductive elements is not enough and requires more insight. Their contribution to abductive research design “Systematic combining - an abductive approach to case research”, received great attention from academics due to the introduction and promotion of a non-linear systems approach to research design (Dubois and Gadde, 2014).

2.1.2 Systematic combining - an abductive approach

Systematic combining is inspired by an abductive research approach, which handles “interrelated elements in the research work” and offers “a non-linear, path dependent process”, which matches the theory and reality of research (Dubois and Gadde, 2002, pp 3). Although the systematic combining is closer in relation to an inductive approach, the main idea of the concept is built on “refinement of existing theories than on inventing new ones” (Dubois and Gadde, 2002, pp 5).

The systematic combining incorporates four dimensions related to the “The empirical world”, “Theory”, “Framework” and “The case”, which are all intertwined in a system where matching, as well as the direction and redirection of the study, connects the dimensions together (see Figure 2.1) (Dubois and Gadde, 2002). The overall idea behind the research design is that interaction between theory and the empirical world is “continuous throughout the research process”, and also incorporates the evolving framework of the study, as well as the actual case (Dubois and Gadde, 2002, pp 3). These four dimensions, are systematically combined during a research project, where all elements contribute during different stages of the study. According to Dubois and Gadde (2014, pp 3), “this stems from the fact that theory cannot be understood without empirical observation and vice versa”. In reference to Dubois and Gadde (2014), the theoretical goal of the study is to analyze and refine existing theory, rather than creating novelty theory. The application of the four dimensions from systematic combining are described and applied to the study, according to the following descriptions.
2.1.2.1 The empirical world

The empirical world describes the overall environment of the master study, where interactions with investors and biotechnology representatives from the cases, as well as the seminars, business meetings and conferences all have a significant role in contributing to information. In reference to a case presented by Dubois and Gadde (2002), observations from the empirical world contributed to new information and findings, which could be used during the interviews, as well as during the framework development. Furthermore, the empirical observations “contributed to further development of the framework and triggered the search for complementary theoretical concepts” (Dubois and Gadde, 2002, pp 4).

2.1.2.2 Framework

The developed framework includes the findings from literature and theory related to evaluation criteria. Dubois and Gadde (2002, pp 5), explain that an “evolving framework is a cornerstone” for systematic combining, as the “empirical observations inspire change of the view of theory and vice versa”. As the framework of the study includes certain
evaluation criteria related to investments, as well as cross border and balancing elements, the used framework is indeed aligned with the suggested evolving framework.

2.1.2.3 The case

This study includes multiple cases of international VC investors, as well as biotechnology representatives. According to Dubois and Gadde (2002, pp 5), multiple cases are positive for systematic combining, “if the research problem is focused on comparison of a few specific variables”. As the research compares different investment criteria for international investors, as well as regional biotechnology representatives, multiple cases are used. In systematic combining, the case element is also considered to be evolving, where the research data includes “pieces in a jigsaw puzzle” which will be added to the final case, and “contribute to the researcher, i.e., to discover new dimensions of the research problem” (Dubois and Gadde, 2002, pp 3).

2.1.2.4 Theory

The theory element in this study, includes relevant research and literature related to investment criteria, cross border investments, as well as elements related to value creation and balance. These aspects are generated by previous literature, however, within the criteria the aim is to develop new themes and variables which can be discovered from the cases. According to Dubois and Gadde (2002, pp 6), “literature helps the researcher to delineate important variables, suggest relationships among them, and directs interpretation of findings”. However, in systematic combining the objective should be to discover other variables and relationships, where the “researcher should not be unnecessarily constrained by having to adhere to previously developed theory” (Dubois and Gadde, 2002, pp 6). Thus, the theory element used in this study is in line with the systematic combining design.

The systematic combining is an interesting approach for this study, due to the various events taken place during the research. Despite the benefits of systematic combining, Dubois and Gadde (2002, pp 7) argues that “conducting research without preconditions” can be highly questionable, as the information runs the risk of not providing any relevant information at all. However, if the activities and steps are planned and executed in a structured way, problems can be avoided. In line with this recommendation, the following sections will give a detailed picture of the background to the systematic approach research design, along with how the data will be collected and subsequently analysed.


2.2 Data collection

The following section will present the outline of the data collection, including a description of the sample used, along with the design of the interviews used for qualitative data collection.

2.2.1 Sample

According to Creswell (2013, pp 189), “the idea behind qualitative research is to purposefully select participants or sites that will best help the researcher understand the problem and research question”. In order to evaluate, analyze and present relevant information related to evaluation criteria used by VC funds, the research sample includes international representatives from seven VC funds across Europe and the United States. The VC funds are engaged in early stage and cross border investments within the life science sector. Furthermore, seven regional biotechnology representatives, who have been successfully involved in the process of seeking and attracting VC funding for a biotechnology company, will be included in the sample. The two subgroups provide insights to what VC funds actually seek during new ventures, as well as what biotechnology representatives believe have been successful when attracting VC. The two subgroups together provide insight to detailed information of what can be successful for an entry stage biotechnology company seeking VC. The answers provided by the investors will constitute the rationale for the data, whereas the answers from the biotechnology representatives will assist to interpret the findings. All interview subjects remain anonymous during the study, due to previously established interview agreements.

Patton (2002, pp 242) explains that “there are no rules for sample size in qualitative inquiry”, and the size simply depends on what the research aims to achieve. Here, the aim is to establish central themes within each of the theoretical evaluation criteria and find mutual significance among the criteria. Also, the secondary aim is to gain insight to how biotechnology companies can balance their valu creating activities within a company. In Franke (2008), a comprehensive literature review indicates a sample size between 8-73 VC investors, used in a personal/phone interview setting, for determining the most significant evaluation criteria among VC investors. By using the study and sample size as a point of reference, it can be concluded that the following research study has a sample size in the lower range.

The cases from the two subgroups have been specifically chosen according to the criteria mentioned below. The cases within the VC investor group follow the characteristics mentioned by Metrick and Yasuda (2010):
1. VC investors serve as a financial intermediary and utilize capital from their investors to invest in portfolio companies\(^1\).
2. VC investors solely invest in private companies, which are not traded publicly.
3. VC investors typically serve as active investors to help and monitor the companies in their portfolio.
4. VC investors have a primary goal to maximize financial return, and “exit” their investments through a sale or initial public offering (IPO).
5. VC investors initiate investments to help fund companies with growth prospects.

Also, the VC investors will incorporate the following specific criteria and preferences for investments, where VC funds:

1. Invest in biotechnology start ups.
2. Invest in early stage companies.
4. Invest in new investments and not only re-investments in a company.

For biotechnology representatives, the cases from the sub group:

1. Operate as a company representative, specifically within the biotechnology sector, due to the specific time and regulatory requirements.
2. Have experience from start ups, which are between pre-clinical and clinical one stages of their projects.
3. Have been involved in successfully attracting international venture capital in early stages of company maturity.

### 2.2.2 Semi-structured interviews

Semi-structured interviews will be used as the method of data collection, to inquire qualitative data with in depth information related to personal experiences and perspectives within the case studies. A literature study is carried out in order to deductively derive a theoretical framework, which will be used for specifying main themes in the data collection. Here, three major search directions are used; namely general evaluation criteria derived from several industries, evaluation criteria within the biotechnology industry, and lastly evaluation criteria used for assessing cross border investments. The combined results from this literature review, meaning a collection of all top criteria found in the three search directions, serve as the theoretical contribution to the final framework.

\(^1\)Angel Investors make use of personal capital. Consequently they do not satisfy the first characteristic mentioned in Metrick and Yasuda (2010), which is why this group of investors is not included in the study.
Qualitative researchers tend to use open-ended questions so that participants can express their own personal views. Therefore, a general interview guide is incorporated during the interview processes, which is in line with recommendations by Patton (2002). Before interviewing the subjects, the outline and the interview topics are explained, which later transitions into the actual interviews. The overall process is an attempt to help the subjects to be more systematic in their answers. With a semi-structured design, open ended questions, from the deductively derived criteria, are asked. Followed by inductively deriving themes for each category. By combining these approaches, the overall theoretical framework is considered to be abductive.

2.3 Analysis

In alignment with the abductive theoretical framework, Patton (2002, pp 454) describes that “qualitative analysis is typically inductive in early stages”, and further explains that “once patterns, themes and/or categories have been established through inductive analysis, the final, confirmatory stage of qualitative analysis may be deductive in testing and affirming the authenticity and appropriateness of the inductive content analysis, including carefully examining deviate cases or data that do not fit the categories developed”. In line with this approach, the data analysis will be carried out in a two-step procedure, where an inductive analysis will be used to discover themes and patterns within the theoretically derived categories, which in turn will be validated in a deductive step.

2.3.1 Inductive analysis

As emphasized by Patton (2002, pp 58), “finding a way to creatively synthesize and present findings is one of the challenges of qualitative analysis”. In order to analyze and interpret the multiple case studies, the gathered information is organized in a structured way. To analyze the content within each of the theoretically derived factors, open coding of the raw data is used, which subsequently narrows down the data into central themes and certain patterns of discussion. From the inductive analysis, themes within each of the categories are defined to reflect the entire content among all subjects within that particular category. An iterative approach, involving continuous comparison of the words to the raw data, is used to find the most representative themes. Lastly, the main themes within each category are defined by using the underlying patterns for each of the themes.
2.3.2 Deductive analysis

The initial step for the deductive component involves an analysis of the data provided by the VC investors separately, to find inconsistent answers and contradictions. After initially analyzing the investor group separately, a cross-comparison is carried out, where the central themes among VC funds are compared to the biotechnology representatives. Such an approach to qualitative research is also supported by Eisenhardt (1989, pp 10), who claims that “one tactic is to select categories or dimensions, and then to look for within-group similarities coupled with intergroup differences.” Looking for similarities will help to define the most prominent patterns within each theme, which are most relevant for attracting capital. Also, the answers among the biotechnology representatives can be used to understand contradictions within the investor subgroup, for instance by filling out void information. Lastly, inconsistent, as well as significant findings will be related to the literature concerning evaluation criteria.

2.4 Limitations of the methodology

A qualitative approach is characterized by a number of limitations, which will be briefly discussed in this following section. The limitations can be related to the validity, as well as, the reliability of the study. According to Anderson (2010), validity relates to the degree in which the findings capture the right phenomena to be investigated. Reliability instead relates to “the reproducibility of the findings” (Anderson, 2010, pp 2).

2.4.1 Validity

For validity, it is partially a question of whether the case subjects represent the phenomenon of evaluation criteria sufficiently. To answer this question, a discussion regarding the homogeneity within the two subgroups is considered. Due to the number of different industry professionals, industry characteristics and certain preferences among the interviewed subjects, it can be difficult to find homogeneity within the subject groups. For VC investors, there are various types of funds, including fully private VC funds, but also funds which are connected to corporate pharmaceutical companies. For the latter, the incentives among the general partners of the fund may be guided by the strategies of the corporate pharmaceutical company. Also, there is a need to consider the size of the fund and how it might lead to certain differences in the answers. The majority of the cases included in this study constitutes of fully private venture capital funds. Hence, there can be subjects which deviate from the standard of the analysis and interpretation of the data. The major expected effect includes a focus towards data and product driven
evaluations among funds which are connected to corporate pharmaceutical companies. These were considerations which were raised during business meetings at a life science conference.

Within the biotechnology subgroup, the major limitations lies in the maturity of the companies and the associated development stages. Hence, the data derived from the subjects refer to the same stages of development for the candidates. To avoid such a limitation, an introductory information section will be read out loud for both subject groups, before starting each individual interview. This way, the same information will be provided to each participant.

Another aspect which is relevant to discuss, in relation to the validity of the study, is the sample size. Due to the limited time span, the study includes a sample size of 14 subjects. This is, as mentioned in the sample section, in the lower range compared to similar studies in the field. Hence, the sample size might partially impair the validity of the results. However, due to the inductive nature of developing new themes and patterns within the criteria, the interview results can be considered as a first step towards understanding evaluation criteria for cross border investments in the biotechnology sector. Therefore, the results need to be further researched and validated in subsequent studies. Witg these aspects in mind, it is believed that a sample size of 14 subjects is sufficient for the study.

2.4.2 Reliability

The reliability of the study can mainly be deduced to the researchers. It is known, and further emphasized in the work by Anderson (2010), that a limitation of qualitative studies relates to the skills, as well as the actual presence of the researcher, during the data collection. Due to the semi-structured interview design, variances may arise regarding specific topics discussed during the interview. As a time constraint also applies to the interviews, it complicates the allocation of time to the various questions within the interview, which ultimately leads to a depth variance from the generated subject answers.

To cope with the variance, a number of sub-criteria are used for the questions to partially clarify specific questions. These sub-criteria are derived from previous literature, but will in the optimal case not be used at all during the interview, thereby leaving the potential range of answers fully open to the interviewee. To cope with the depth for each question within the individual interviews, a timetable is used to dedicate a certain time to each question.
Chapter 3

Literature review of evaluation criteria

There are numerous initiatives taken in order to understand the interaction between startup companies and venture capitalists; in academic journals, as well as in informal literature. Studies on the evaluation criteria used during the investment procedure in venture proposals, have attracted attention ever since the 1970s (Nunes et al., 2014; Franke, 2008), where three main reasons are suggested behind this urge (Franke, 2008).

First, the studies can provide quality guidelines for new ventures, which could help the internal assessments of projects and value proposals among early stage companies. Second, the studies can help venture capital firms to compare or calibrate their own research criteria, by becoming aware of competitor strategies. Third, the research criteria among venture capital entities could give good indications on “success factors for emerging firms” (Franke, 2008, pp 2), which is a highly attractive resource in startup projects (ibid).

The outcome of this chapter is a collective framework, which incorporates literature research related to (1) general evaluation criteria, (2) industry specific evaluation criteria, and (3) cross border evaluation criteria (see Figure 3.1).

The framework serves as a basis for the conducted interviews with international VC investors and regional biotechnology representatives. To create the framework, the chapter first provides an overview of investment procedures for evaluating new ventures. Second, the chapter presents literature related to general evaluation criteria from studies focused on multiple industries, followed by industry specific evaluation criteria for the biotechnology industry, along with evaluation criteria related to cross border investments. Third, the relative importance of evaluation criteria is discussed, and a systems perspective on value creation will be introduced. Last, the framework is presented as a summary.
3.1 The evaluation procedure of venture proposals

In order to understand what evaluation criteria are used when assessing venture proposals, it is of importance to understand the actual evaluation procedure which takes place once the venture proposals reach the VC firm. The following section will clarify how the concept of complete venture proposals reflects the total value proposed by venture projects when encountering VC investors (Franke, 2008). The study of complete venture proposals are important for understanding the overall investment procedure among venture capitalists (Franke, 2008). Due to the risks related to early stage research projects, VC firms incorporate certain investment procedures, where VC firms “respond to the risk embedded in innovative investments and deal with the agency problems arising between entrepreneurs and investors”, by adopting various solutions to coordinate their investments (Munari et al., 2011, 313).
In Figure 3.2 (Baeyens et al., 2006) a conceptualization of the investment procedure is depicted, which is a research field pioneered by Tyebjee and Bruno (1984). In a well cited work, the authors present a five-step investment process, which according to Franke (2008) still mirrors contemporary evaluation processes. The five steps described in Tyebjee and Bruno (1984) are as followed:

1. **Deal origination** The first step in the investment procedure is the origination of a new investment. Teten and Farmer (2010), claims to have contributed with one of the first systematic studies on the topic of Deal Originations. According to their study “the most significant sources of deal origination [...] include personal and professional networks and the reputation of the general partners and principals” (Teten and Farmer, 2010, pp 3). Further, the study highlight aspects such as market mapping, i.e. understanding the economic drivers and key players of the market and industry specialization, e.g. specialization in the Life science industry, as important considerations for originating a successful deal “Specialization—and marketing accordingly—does enhance deal origination. Specialization allows for a deeper knowledge base, ability to add more value through an enhanced network, and is likely to make a tund top of mind for key sources of deals in the domain” (Teten and Farmer, 2010, pp 5).

2. **Deal screening** As we can see from the Deal Origination, each venture capital firm can have its own pre-defined selection criteria, such as “target industries, preferred stages of development, geographical location and minimum/maximum size of investment” (Baeyens et al., 2006, pp 7), reflecting the investment strategy of the firm. With regard to these criteria, an initial screening process is carried out, where VCs evaluate the overall fit between the target company and their particular portfolio strategy. Several projects are rejected already at this stage, where “may be a symptom that the proponents are not completely aware of the VCs evaluation criteria ” (Nunes et al., 2014, pp 21).

3. **Deal evaluation** Deal Evaluation, also referred to as due diligence, is an in-depth and resource demanding evaluation of the venture project where “proposals that fit the investment strategy and pass the screening phase are examined in more detail during the due diligence process” (Baeyens et al., 2006, pp 15). Typically, when reaching this step, the number of project candidates are substantially reduced. The two-step procedure
of screening and evaluation seems to provide a general idea about the company where “well-performed screening and due diligence should lead to VCs financing for the most valuable companies” (Baeyens et al., 2006, pp 3). This comprehensive evaluation of the proposal partially serves to reduce the problems of opportunity costs and information asymmetry between the, as discussed in Cable and Shane (1997).

4) **Deal structuring** During deal structuring, negotiations regarding liquidity events take place. Here the valuation of the company plays a key role, where the venture capital investors require a certain hurdle rate, or minimum rate of return. This hurdle rate can relate to the risks associated with the venture (Baeyens et al., 2006). Upon successful negotiations, the investment deal is specified in a contract.

5) **Post investment activities** The last proceeding results of the investment has to be closely managed and monitored through a number of activities. Tyebjee and Bruno (1984) describes such activities as “the assistance to the venture in the areas of recruiting key executives, strategic planning, locating expansion financing, and orchestrating a merger, acquisition or public offering” (Tyebjee and Bruno, 1984, pp 1).

Understanding the overall portfolio strategy of the firm, such as the industry and market preferences is a first step towards attracting capital. As mentioned in Nunes et al. (2014), the unawareness of VCs evaluation criteria among high technology companies can impair the chances of becoming a target of investments. Also, Baeyens et al. (2006, pp 11) finds that “VCs in our sample agree that biotech proposals require significantly more extensive due diligence compared to other technology-based investment proposals”. The next section will review the evaluation criteria used among VCs to assess high technology ventures. These criteria relate to investment steps succeeding the screening process, i.e. after the fit to the portfolio strategy has been determined, and up to the point of contracting.

### 3.2 Evaluation criteria for venture proposals

In the following section, a literature review of evaluation criteria is presented. Starting with general evaluation criteria across multiple industries, followed by industry specific evaluation criteria in the biotechnology sector, and cross border evaluation criteria.

#### 3.2.1 General evaluation criteria across industries

VC firms make use of various evaluation criteria in order to assess and select among venture proposals. The first studies, related to evaluation criteria, are dated back to the
1970s (Franke, 2008). MacMillan et al. (1986) describes five main categories of criteria that venture capitalists consider upon evaluation, which are partially mirrored in the earlier work by Tyebjee and Bruno (1984). These criteria are considered to be general, as they are applied and tested across various industries. The criteria from early studies presented by Tyebjee and Bruno (1984) include; (1) Market attractiveness, (2) Product differentiation, (3) Managerial capabilities, (4) Environmental threat resistance, and (5) Cash-out potential.

MacMillan et al. (1986), concluded that five out of the ten top criteria from the study, related to the characteristics of the entrepreneur. Ever since, a number of studies have investigated various aspects relating to the entrepreneur and team characteristics (Robinson, 1987; Dixon, 1991; Muzyka et al., 1996; Shepherd, 1999; Franke et al., 2006). The criteria related to the entrepreneur, is also highlighted among VC investors, who state that a VC would rather invest “in a grade A team with a grade B idea than in a grade B team with a grade A idea” (Bygrave, 1997).

The criteria described in early literature, along with the significance of the human factor, seem to hold true in most recent literature of general evaluation criteria. An extensive literature review by Franke (2008) suggests that there are four categories of evaluation criteria used for assessing venture proposals;

1. The product/service offering
2. The market/industry
3. The start up team
4. The financial considerations

Among these criteria, the significance of the startup team is once again highlighted by Franke (2008) as the most important factor, which is also supported by the later research by Kollmann and Kuckertz (2010).

### 3.2.2 Industry specific evaluation criteria for biotechnology

Despite high risks in biotechnology investments, a coherent view of the differences in biotechnology investments compared to other high technology investments are difficult to assess. Certain studies argue that there is no evidence that venture capitalists have greater hurdles when evaluating biotechnology investments (Baeyens et al., 2006), while other researchers argue that biotechnology investments include research criteria, which are specific for the industry and makes the evaluations more challenging (Jung et al., 2011).
According to Baeyens et al. (2006, pp 11), the importance of “financial elements, market, technology and entrepreneurial management team are the most important criteria within the due diligence phase of biotech companies”, which elaborates on previous research regarding venture proposal criteria. A few years later Ranade (2008) elaborated on the topic of VC evaluation criteria, where his research also emphasized general investment criteria, with some additional aspects incorporated. An industry specific research paper was written in 2011 regarding VC Decision Making Behavior in Biotechnology, where Jung et al. (2011), also modified and applied the general criteria used in previous research of VC evaluation criteria Franke (2008). The authors claimed that although the criteria can be applied to the biotechnology industry, there are additional factors which can be incorporated, such as knowledge networks (Jung et al., 2011).

Although four general criteria were considered to be most applicable to the biotechnology industry, the additional criteria of knowledge networks, received a significant score, which indicated its relevance as an independent criteria for VC investors to include in biotechnology venture proposals (Jung et al., 2011). As the research criteria for venture proposals seem to transfer over to the biotechnology industry, with a smaller modification of Knowledge Networks, the following section discusses the criteria related to Biotechnology companies in depth.

3.2.2.1 Finance

The financial characteristics of a biotechnology venture is considered to have a major impact on the evaluation of a company, where “the availability of funds, the long-term pattern of funding, and the timing of funding” play a critical role (Ranade, 2008, pp 47). As VC investments in biotechnology companies only allow for a certain time frame for exits, the VC firms will apply a significant focus on the financial aspects of a new venture (Baeyens et al., 2006; Jung et al., 2011). Furthermore, Baeyens et al. (2006, pp 11) claim that VCs require a “complete financial plan based on realistic assumptions”, although the consideration of these financial elements are rarely followed through. According to Jung et al. (2011, pp 24), “the exit opportunity and degree of competition is ranked as the two most important criteria” in their study, which is different from previous research in general criteria. Additionally, VC investors look “beyond the current financing round”, and also consider re-investments and full investments cycles as an evaluation factor in early stages (Baeyens et al., 2006, pp 11).
3.2.2.2 Market

Research by Baeyens et al. (2006, pp 12), indicated that the market strategy was considered as a key criteria, and VCs evaluate a “well-developed market model”. The market aspect is also critical for the evaluation perspective, as the value and attractiveness of the company will depend on the actual market (Ranade, 2008). Baeyens et al. (2006, pp 12) claim that “Entrepreneurs are forced to think thoroughly about the follow question, before seeking support from VCs: Who will the company’s customers be? What will the company offer? How will the company create value?”, which shows how important it is for candidates to consider the market aspect. Jung et al. (2011), concluded that the competition is an important aspect within the market criteria, as protection and patents for products is viewed as a race between various candidates to reach commercialization. Furthermore, market size and growth seemed to be “less important for biotech investors, than previous studies and literature on this topic” (Jung et al., 2011, pp 26). Jung et al. (2011) explains that the market can be targeted at an early stage, as the future area of research is directly determined by the early focus.

3.2.2.3 Team

Although any company requires strong management and leadership, biotechnology companies require a specific combination of “strong technological expertise and long-term foresight under conditions of great uncertainty” (Rhyne, 2009, pp 11). While the management capabilities seem to have an important part in the success for biotechnology companies, it is argued that the criteria depends on the investors, and what phases they invest in (Baeyens et al., 2006). According to (Jung et al., 2011), the criteria ranked third in his study, which indicates that the proposed criteria might be lower in ranking when evaluating venture proposals from biotechnology companies. Additionally, Baeyens et al. (2006, pp 12), argues that management “is a more important factor for later stage investors than for early stage investors”, and that their research findings do not support earlier literature. Although the industry specific research challenges the team criteria as the primary investment criteria (Baeyens et al., 2006; Jung et al., 2011), Ranade (2008, pp 47), claims that the team criteria is the “universal factor in company valuation” for biotechnology, due to the industry’s knowledge-driven elements.

3.2.2.4 Product

The research of Jung et al. (2011, pp 26), indicated that the product criteria had low importance, “as for VCs it seems to be more important that their funded company is ahead
of its competitors than having a unique technology or a large product pipeline”. However, in their personal reflection, they also “argue that the product dimension is rather underestimated” (Jung et al., 2011, pp 27). The R&D and Technology of a product usually serves as “a foundation for any biotechnology company”, and can be viewed as the most valuable factor (Ranade, 2008, pp 47). Another highly important aspect and prerequisite for the product criteria relates to the Intellectual Property (IP) of a product (Baeyens et al., 2006), which can be helpful for companies to retrieve “exclusive rights to their products” related to pricing and profitability (Ranade, 2008, pp 47). IP rights can offer an “external validation of uniqueness of the technology”, and can reduce certain anticipated risks for the product (Baeyens et al., 2006, pp 12). However, patent infringements are quite common within biotechnology, and can lead to substantial expenses (Ranade, 2008). It is also important to know that IP rights are rarely any guarantees for the future and “do not protect biotech companies against superior, competing technologies or products” (Baeyens et al., 2006, pp 12).

3.2.2.5 Knowledge networks

The importance of Knowledge Networks within the biotechnology sector has been expressed in academic research for several years as a successful factor for early stage companies, and Jung et al. (2011) argues that the criteria should be included as an evaluation component for VCs. Ranade (2008, pp 47) also explains that the biotechnology industry “thrives on collaborations”, and for smaller companies it can be significant to depend on certain alliances related to R&D, as well as marketing. Additionally, biotechnology collaborations can lead to more frequent mergers and acquisitions, extra resources for firm protection, and overall stronger performance (Ranade, 2008; Jung et al., 2011). In addition to validating the potential of a company, knowledge networks may also drive a jointly developed product to increase the company value (Ranade, 2008). An interesting finding from Jung et al. (2011) showed that informal knowledge networks were preferred by VC investors, especially for early stage biotechnology companies. As resources can be limited for early stage biotechnology companies, VC investors know the importance of information contacts during the long and costly development processes; and since the need for flexibility is important during early stages, informal networks can limit the legal aspects compared to formal arrangements (Jung et al., 2011).

3.2.3 Evaluation criteria for cross border investments

In recent years, the internationalization of VC has increased in recognition (Bottazzi et al., 2004), however not yet notably explored in terms of “the difference between VCs
regarding internationalization” (Nunes et al., 2014, pp 8). It is a matter of perspective when defining internationalization of VCs; either as “the process of raising funds in foreign markets” (Nunes et al., 2014, pp 21) or “the investing in companies based in other countries than country of origin of VCs” (Wright et al., 2005, pp 147). The latter definition will apply to the work presented in the following section. Below a brief review of existing literature on international VC capital and cross border investments is presented.

3.2.3.1 International Venture Capital

Research initiatives on international VC are versatile, which in most cases include the incentives among investors to invest internationally (Tarrade, 2012), why certain target markets are chosen (Hall and Tu, 2003; Aizenman and Kendall, 2008; Tarrade, 2012), as well as studies, which focus on factors such as the business plan (Onetti, 2012) and the role of local investors (Mäkelä and Maula, 2004).

The work by Wright et al. (2005) is one of the earlier initiatives towards studying the phenomenon of cross border investments. The study sheds light on the fact that earlier work mainly is focused to cross-country comparisons of VCs, rather than the cross border transfer of venture capital; “this underdevelopment is surprising, given the extent of cross border investment activity” (Wright et al., 2005, pp 13). The study comprises a comprehensive literature review on cross border VC investments, relating to the different steps of the investment procedure as described in Section 3.1. Regarding fund organization, motivations and strategies, cultural differences and geographical distance are factors which could potentially complicate cross border investments, where the investor needs to consider a certain level of adaption to local market conditions. In a study by Bruton et al. (2005), on Western and East Asian firms, factors such as “ownership structure, family control and codes of corporate governance” are mentioned (Wright et al., 2005, pp 14). Further, the significance of “skills of executives operating in that market” and “locally based VC personnel who are culturally attuned” are stressed. Wright et al. (2005, pp 14) specifies three models of internationalization (Dixit and Jayaraman, 2001). First, specialized fund model refers to specialization with respect to geographical considerations, as well as the investment stages, such as early stage investments. The organic growth model relies on “transfer of expertise from the domestic market” (Wright et al., 2005, pp 14). Lastly, the affiliate model deals with syndication and the role of a local co-investor.

In relation to the investment procedure, Wright et al. (2005) present a number of aspects found in earlier literature. The role of physical presence and local integration, along with the syndication and other collaboration with local investors, may significantly help to generate and manage deals across borders. Commitment among investors to a particular
venture in foreign markets might be affected by a number of factors, e.g. “geographic and cultural distance, dependence of the foreign investor on investors and entrepreneurs in the key locations of the venture, and financial relevance of the venture” (Wright et al., 2005, pp 16). Bonds to the focal country, such as co-investors might also reinforce the commitment among investors to a certain venture.

3.2.3.2 Studies on cross border evaluation criteria

There is limited effort put into understanding how the evaluation criteria of venture proposals might change in cross border settings. As far as the authors of this study are aware, there are no existing studies on evaluation criteria for cross border capital within the biotechnology industry. In regard to general evaluation criteria among VC investors, Nunes et al. (2014) call for more studies on internationalization and VC evaluation criteria, where they explain that “it would be relevant to study whether the most valued criteria by VCs when they invest in their own country are the same than when they invest in projects based in other countries” (Nunes et al., 2014, pp 8). Furthermore, the article highlights that existing research does not incorporate questions related to if “VCs from small VC markets which already began their internationalization process value in a different manner the evaluation and selection criteria of early stage projects, than VCs that did not yet start that process?”. The article uses a quantitative approach, where 45 factors found among existing literature, are included in a survey framework. These factors are again in line with the factors suggested in MacMillan et al. (1986). Further, an additional category labeled “other” has been added to their study, including the factors business plan quality, VCs intuition, sensibility to economic cycles, production capacity and geographic location.

3.3 Relative importance of evaluation criteria

Over the past decades several authors devoted themselves to ranking various evaluation criteria to find mutual significance. However, Baeyens et al. (2006, pp 3) point out inconsistencies regarding the relative importance among key factors in the literature, “with respect to which criteria are most important in the investment decision of VCs”. For example, Nunes et al. (2014) concludes that non-international VCs, in comparison to international VCs, pay more attention to the personality of the management team and entrepreneur, as well as the financial aspects. However, when researching the biotechnology specific factors, the financial aspects were rated highest (24.43 percent), followed by the market criteria (21.42 percent). The team criteria was highlighted as the third
most important aspect (19.13 percent), and the product related criteria was rated lowest (16.28 percent) (Jung et al., 2011).

The inconsistencies of ranking certain criteria, can be the cause of numerous sub-categories, which are incorporated into the research criteria, leading to certain complexity of ranking too many aspects at once. Kollmann and Kuckertz (2010) made an attempt to review and extract all general research criteria explored in earlier literature, along with their associated subcategories, to investigate the evaluation criteria uncertainty throughout the investment process. In their research it was concluded that market and financial aspects remain uncertain throughout the entire procedure, whereas the team criteria was less intricate over time (Kollmann and Kuckertz, 2010). The research also indicated that there were excessive steps within the investment process, as well as the various evaluation criteria. Therefore, the authors urge for more integrative and dynamic perspectives on the significance of evaluation criteria (Kollmann and Kuckertz, 2010).

The overabundance leads to certain complications to understand the significance of investment criteria (Franke, 2008; Nunes et al., 2014). As previously discussed in the introduction, investments and evaluation criteria are highly linked to the concept of value. Companies seeking VC funding need to communicate their value to investors during new ventures (MacMillan et al., 1986), and have the ability to create additional value from the raised capital to assure and generate future cash flows (Koller et al., 2010). Mizik and Jacobson (2003), argue that companies can face strategic challenges when trying to balance their value creating activities simultaneously. In alignment with the suggestions of Kollmann and Kuckertz (2010, pp 1), “integrative and dynamic perspectives” can be provided by incorporating evaluation criteria with the ability to balance value creating activities within a company. Such an approach can provide a more realistic outlook on international VC evaluation criteria.

3.4 Summary of theoretical findings

In Table 3.1, a summary of the evaluation criteria from the literature review is presented. The literature studies included several sub-categories within the criteria, but led to inconsistencies from the ranking and the number of sub-categories. Hence, the theoretical framework solely includes the main evaluation criteria (mentioned in table 3.1) from general, biotechnology specific and cross border specific research.
Table 3.1: Summary of evaluation criteria derived from the literature review

<table>
<thead>
<tr>
<th>Factor</th>
<th>General industry</th>
<th>Biotechnology</th>
<th>Cross border</th>
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</thead>
<tbody>
<tr>
<td>Team</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Market</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Product</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Finance</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Knowledge networks</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other cross border aspects</td>
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<td>x</td>
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</table>

Studies related to the general investment criteria are built from earlier work by MacMillan et al. (1986), and were further developed by authors such as Kollmann and Kuckertz (2010) and Franke (2008). These criteria have subsequently been applied to the biotechnology sector by Baeyens et al. (2006), Ranade (2008), and Jung et al. (2011), while Nunes et al. (2014) applied the criteria to cross border investments. Although the evaluation criteria might overlap among the three theoretical search directions, as seen in the table 3.1, these criteria can mutually provide significant insight into what VC investors seek during early stage and cross border investments in biotechnology.

Lastly, as described in section 3.3, the element of relative importance among evaluation criteria led to interesting literature findings. The overabundance of evaluation criteria and the ranking of criteria seem to result in different outcomes among studies. The various outcomes can lead to certain implications related to the interpretation of results. Therefore, the study intends to include a novel and integrative perspective on how to interpret the relative importance of evaluation criteria. By incorporating a question related to balancing value creating activities, the study might provide a better understanding of how biotechnology companies should balance their activities to meet the specific evaluation criteria among VC funds. The question is an extension to the first research question of the study and allows for a dynamic and integrative approach towards evaluation criteria suggested by Kollmann and Kuckertz (2010).
Chapter 4

Inductive analysis of interview data

In alignment with Patton (2002, pp 58), the inductive analysis includes a structured way to analyze and interpret multiple cases. The chapter presents the inductive analysis of the collected data, which includes the findings from the semi-structured interviews with international VC investors and biotechnology representatives. The presented data is structured and categorized in the evaluation criteria from the theoretical framework, as well as themes and descriptive patterns. The themes and patterns within the interview data intends to reflect the entire content found within the multiple interviews, and does not exclude any findings. The raw data findings from the inductive analysis are presented in a table format in Appendix A.1 - A.7.

4.1 Summary of the inductive analysis

In Table 4.1, the central themes found for each criteria, including both groups of subjects, are presented. The findings include themes (1) evaluation criteria found in the theoretical framework and the (2) balancing activities aspect, discussed in Section 3.3. The following sections will provide a representation of all patterns which describe the themes.
Table 4.1: Summary of central themes for the evaluation criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Theme</th>
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<tbody>
<tr>
<td><strong>Team</strong></td>
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<tr>
<td>Composition</td>
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<td>Skills and experience</td>
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<td>Personality &amp; dynamics</td>
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<td>Team awareness</td>
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<td>International elements</td>
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<tr>
<td><strong>Product</strong></td>
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<tr>
<td>General contributions</td>
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<tr>
<td>Research design</td>
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<tr>
<td>Data</td>
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<tr>
<td>Innovation height</td>
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<td>IP</td>
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<tr>
<td>Communication strategy</td>
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<td><strong>Market</strong></td>
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<tr>
<td>End customer focus</td>
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<tr>
<td>Commercial fit</td>
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<td>Market size</td>
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<td>Market value</td>
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<td><strong>Finance</strong></td>
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<tr>
<td>General contributions</td>
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<td>ROI</td>
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<td>Exit strategy</td>
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<td>Risk</td>
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<td><strong>Knowledge networks</strong></td>
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<td>Research alliances</td>
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<tr>
<td><strong>Other cross border aspects</strong></td>
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<tr>
<td>General contributions</td>
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<tr>
<td>Implications of location</td>
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<td>Coping with uncertainty</td>
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<td>US market</td>
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<tr>
<td>Mentalities</td>
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<tr>
<td><strong>Balancing activities</strong></td>
<td></td>
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<tr>
<td>Communicating value</td>
<td></td>
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<tr>
<td>Team</td>
<td></td>
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<tr>
<td>Technology or market orientation</td>
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</table>

4.2 Venture capital funds

The following section includes the results for the VC investor group, which includes seven representatives from international VC funds in Europe and United States. The collected data is structured according to the evaluation criteria, as well as the identified themes and patterns.
4.2.1 Team

The themes related to team have been identified as (1) composition, (2) skills and experience, (3) personality, (4) team awareness, and (5) international elements. When assessing the team criteria, some investors mention that the criteria is vital during venture evaluations. However, other investors also believe that the team can be replaced throughout the long development cycle, despite the importance of the criteria.

4.2.1.1 Composition

The composition of the team relates to how the team is structured, where investors explain how they want to meet companies, which have a complete team structure before seeking VC funding. The diversity within the team is also highlighted, as investors wish to see teams, “which are highly focused on the science, but also members who can translate science into commercial products”. The composition seems especially important during the initial personal meetings with investors, where the team really needs to make a good impression. During the personal meetings, the initial interaction with the biotechnology company will be assessed, as well as the overall group dynamics and the various roles within the company. The CEO and founder are the most important components of the team during early stages, and investors want to know that these key people can guide the company through difficult phases and challenges. If certain team components are missing, some investors “may also help biotechnology companies to match the company with the right type of business development professionals or even help the team members to grow into their roles within the company and build them over time”. However, as the company development continues, there will be changes in the management composition to meet the right needs of the company at a certain point in time. The commercial skills can always be added during later stages, or as an investor explained that “resource problems can always be fixed later”.

4.2.1.2 Skills and experience

In relation to the experience within the team, investors mention the positive elements of knowing that team members have previous track records from developing and bringing a research project forward. According to an investor, there are usually two types of companies, ones which are highly experienced within the industry, and ones which are fresh out of university with a newly initiated project. Although the latter example of companies usually have limited experience, the right competencies and the scientific knowledge will be assessed and these aspects “need to be in place”. The ideal team
includes individuals with a wide range of field expertise. This would be team members who are strong in the fields of science, finance, medical and marketing overall. According to an investor “this is not necessarily the same person, because that kind of person does not exist”. However, as the CEO has the main responsibility within a company, the need for a CEO with diverse skills and experiences are highlighted. Several investors believe the CEO should have previous experience from working in small and large companies, so that the VC investors have a sense of feeling that the teams can “apply their experience to the current company”. Preferably, the CEO has a medical background and has worked with university spin outs with pre-clinical and clinical development as well. Also, if they have had responsibilities from research and clinical tests, it is a merit, but not a necessity. Leadership skills are also highlighted as an important aspect for CEOs to attract smart and good people, as well as to raise capital by telling compelling stories to VC investors. Communication skills also become essential, as they work fairly close with their investment companies, and maintain good relationships overall. In early stages, it is important to have a CEO who is “good with forms and infrastructure”, while the later stages require skills within clinical development. According to an investor, a majority of CEOs are scientists by profession, and overall individuals with strong science backgrounds need to be within the company.

4.2.1.3 Personality and dynamics

The team personality and dynamics are highlighted among investors, as they aim to work with people over a long time period, and need to be able to collaborate well with the company. A few investors compare a partnership with a “marriage”, and the chemistry within and outside the team needs to be considered during evaluation. If investors are aware of the positive dynamics of a team, they believe that the team will perform on the job as well. If there are certain issues within the team, it is important for investors to be aware from the beginning, and it is better to be honest about these elements. Again, investors want to see a CEO, who is likable, instead of a general, who dictates the operations within a company. As biotechnology companies comprise of bright individuals, the personal traits of the CEO play an important role for empowering individuals within the team, instead of bringing them down.

4.2.1.4 Team awareness

An investor explained the importance of team awareness and recommended that companies should be “aware of what you have and what you need”. The team awareness can help biotechnology companies and investors to make up a plan of how to acquire certain
competencies, which early stage companies might be lacking. An investor highlights that “we have burned ourselves by scientists who always wanted to be the smartest people in the room”, and that is not how partnerships usually work. Investors are often aware that all teams require some sort of skills, which need to be added within a company. If the biotechnology companies can acknowledge these aspects, it showcases their ability to adapt to changes and re-invent strategies in case of obstacles.

4.2.1.5 International elements

Global diversity within a team is a relevant theme for investors, as “biotechnology is never local, biotechnology by definition is global”. International backgrounds, nationalities and experiences are factors investors evaluate, where international experience includes having lived or worked in more than one country, or even the ability to speak other languages. Language skills are also important, as investors “look for abilities to be persuaded with good expression in English, because that is what they will have to do to raise capital and do partnerships”. However, investors believe that international elements can be challenging to find among biotechnology companies in Scandinavia. Although there have been companies with great international experience at times, they are limited in quantity.

4.2.2 Product

Four main themes have emerged from the product criteria, including (1) the research design (2) data, generated from the research studies, (3) IP-rights, which includes protection of the molecular entity (4) innovation height, related to the product. An investor stresses the product category as the most pivotal during evaluation, where the subject explains that “if we do not believe in the product, we do not believe in the case at all”. Furthermore, another investor emphasizes the underlying subjectivity of the product criteria, where the criteria might not be applicable to all venture funds, due to certain preferences.

4.2.2.1 Research design

The answers related to the research design describe major patterns including time, trial design, size, proof of concept studies and previous work experience among researchers. One subject states that investing in a company “is a matter of time”, and seen to the actual design of the research studies, there are a number of essential questions which investors consider. Whenever there is a refinancing of a company, there is a need for
proof, which gives an indication whether the results are feasible, in terms of time and long-term financing plans. The size of the subgroup in clinical trials is mentioned by a subject, which is highlighted in relation to proof of concept studies and taking part in phase II clinical studies. In certain cases where rare elements exist, such as orphan drug cases, available subjects for a proof of concept study might be limited, which means lower costs compared to studies which require more common characteristics. Further, one of the subjects mentions that their fund collaborates with experts on trial designs, in order to assess the quality. One subject mentions that it is important to have considered the trials, and that the design of experiments should be aligned with what the company aims to achieve. Regarding the research experience of the team, one subject mentions that they investigate what scientific publications and knowledge the team has previously achieved. Within this element, they look into publications on the mechanism of action, what has been done within the field, if the team has a good reputation, and if they are known to be active in disease areas. Also, the fund considers potential resources that could help following up the validity of the information provided by the companies. Again, it is emphasized that there are several questions to ask, which are determined on a project to project basis.

### 4.2.2.2 Data

Within the data theme, a question relates to how well data can be collected. In terms of the data itself, mechanism of action is mentioned as an essential concept by two of the subjects. Furthermore, it is mentioned that investors look into validity of animal data upon assessment, to determine the good provision of what happens when you transition into clinical studies in human beings. Another quality aspect of the data relates to the experience within the team, and how well they can manage to yield consistent results. One subject mentions that weak results from trials can lead the clinical assessors to think that “the people carrying out the experiment had not been capable of doing it correctly”. It is also explained that running a specific pre-clinical experiment for the first time rarely yields identical results, as in comparison to later experiments when researchers know the details of the animal model.

### 4.2.2.3 Innovation height

One of the subjects mentions that investors work on averages and it is not enough with a slightly better product, as it yields limited profit. Innovation height, uniqueness, differentiation and radical improvement are examples of patterns mentioned among the
subjects, which all explain that the product must be innovative with a great leap forward in comparison to competitors. Certain concerns, mentioned within the theme of innovation height, include strong competition, insufficient value added by the product, or limited strength in the mechanism of action. Another aspect of innovation height relates to choosing appropriate implications for the product. For example, an investor explains that if there are “five viable implications of one drug [...] that is not viable”. There needs to be a focus on one implication.

4.2.2.4 IP

Protection of the science behind the product candidate is mentioned among most subjects. There needs to be a solid IP on manufacturing, methods and composition of matter, or whatever is relevant. IP is mentioned as a check mark and “if it is not there, there is no company at all”. If there is no IP in place for orphan drugs, it might not hold up scrutiny, despite a high quality team and project. One subject mentions that “composition of matter” is a recommended IP right, since there are some big pharma companies which will not acquire companies without an IP in place. Geographical considerations for IP are also mentioned as an important factor as investors often “see projects that are patented in a limited geography”, meaning that large and significant markets are missing. One subject also recommends that companies holding completely new molecular entities should try to contact IP consultants.

4.2.3 Market

It is mentioned that the market criteria is challenging to discuss in earlier stages and before later clinical development phases, where a comprehensive and detailed market fit among all existing treatment standards should exist. Biotechnology companies should have a better idea about the first-, second- and third-line treatments used in hospitals, and whether the product can be used in a combination treatment with existing drugs. Before these elements can be understood, an investor mentions that they try to make an “educated guess”. Key questions related to the market criteria, include the robustness of the technical specification, why the specification would work for a particular clinical indication and lastly, why the indication can be selected. An investor mentions that they tend to match biotechnology companies with consultants, who carry out the market assessment, since it can be hard for researchers to do. Another subject states that they expect the companies to provide quite detailed market research, which the VC funds can validate. Databases, data monitor reports and EP reports are mentioned as ways to research the market criteria.
4.2.3.1 End customer focus

A focus towards potential customers, as well as the final product, has been mentioned by several subjects. The VC funding will only constitute a certain part of the total funding, meaning that the incentives among potential buyers of the company, play a pivotal role, i.e. some of the end customers of the project. As one subject mentioned; “if we can’t see a potential buyer in some years, we will not do it”. A central pattern within the end customer aspect, again mentioned by the vast majority of the subjects, includes the communication with key opinion leaders. The investors need to hear from key opinion leaders that the product is a future candidate of treatment. According to the investors, key opinion leaders can be hospital staff, health insurance companies, big pharmaceutical companies and international agencies. Here, one of the subjects discuss how the financial incentives among physicians are affected by the product strategy related to how the product is financed or used. Further, one subject mentions that there needs to be a collaboration with chief physicians. Standard of care is another pattern discussion in relation to oncology, since the standard of care rapidly changes. These changes make it hard to predict the relevancy of the product in the future, due to the lengthy development procedure of medicinal drugs. Also, the work with key opinion leaders and agencies should be done internationally, as biotechnology companies should figure out the needs of big pharma companies, and establish connections.

4.2.3.2 Commercial fit

The commercial fit relates to the question of how a product should be positioned against the market, where the company itself should be aligned with the market, and know how the product is applied in the market. The value lies in knowing how the product fits into a market with certain competitors. An investor mentions that they usually have an early discussion regarding market fit with the company. Another subject states that some biotechnology companies are not looking into the market - they are solely developing a product within a large market, which is not a relevant approach according to the investor. In line with these patterns, the market fit is more important than the market size. Furthermore, another pattern relates to the proof of commercial, which proves how something is relevant in the market and patient, instead of the proof of concept, which proves a certain hypothesis. Some subjects mention how it can be good to start with defining the commercial picture, and work backwards after that. Another central pattern within the commercial fit theme, includes trends in the market. Standard of care is commonly mentioned when discussing trends. In oncology studies for example, it can be very complicated to assess the standard of care, due to the rapidly changing standards. Other subjects mention topics such as the historical statistical trends for
certain indications and therapeutic areas, and how this might predict the risks associated with current studies. Some investors have claimed that “jumping on a trend” is pointless, since current trends were worth investing in five years ago.

4.2.3.3 Market size

Market size mainly relates to the potential patient groups, which companies can reach. However, there needs to be a consideration that only a certain portion of the patient population might be correctly diagnosed, in a certain part of the world. Further, not everyone might have access to the treatment, or have the ability to recover from the treatment. Therefore, serving the full patient population is rarely the case, and an approach to understanding the market size includes looking into how existing literature and findings describe the patient population.

4.2.3.4 Market value

Market value is primarily mentioned in terms of reimbursement pricing of the final product. An investor states that if companies present an expensive solution, the level of novelty needs to be high, or the product allows for long-term savings for the society. “Price captures everything”, and receiving a good price depends on how the product provides better treatments for the patients. A health economic measure is quality adjusted life years, which reflects the mean patient cost per year of treatment. Any medication which exceeds this value, will not be accepted. The market value and pricing highly relates to the market size, and an investor mentions that some of the more expensive treatments for large oncology indications have still not been reimbursed. At the same time, treatment for a rare indication, which has received limited current treatment options, can have a higher willingness to pay. It is furthermore stated that the EU is fairly restrained in pricing in comparison to the US.

4.2.4 Finance

The central themes related to the financial criteria include (1) ROI, the return on investment for the specific venture (2) exit strategy, related to how the company is sold to the end customer (3) risk, associated with the investment, and (4) financial syndication, related to co-investments in the project.
4.2.4.1 ROI

ROI is a requirement for VCs to have an annual return to the limited partners of the fund. The financial ROI can sometimes be difficult to discuss with scientists, as mentioned by one of the investors. Another subject explains that VCs usually enter when there is an initial idea, and subsequently takes this idea to a next stage, with an increased company value as a result. To investors, a common minimum hurdle rate, which is the minimum ROI, corresponds to three times the amount of invested capital. The hurdle rate is partially guided by the agreements set up with the limited partners of the fund. A return of 6-7% per year is mentioned as an example of a yearly ROI and in principle, a fund would not accept a return below five times as big as the investment. One simple way to estimate ROI is to benchmark the research project, by looking into statistics on how much a company was sold for within a particular product category and phase. However, it is also mentioned by an investor that 4 out of 10 investments will return nothing.

4.2.4.2 Exit strategy

The exit strategy refers to the sale of a company to a third party stakeholder. For an exit strategy, it is suggested that companies need to show that the exit has been considered and thought about. Investors would also like to know that there is a commitment towards the exit, and that the company will work hard to reach the exit, which is where VCs will have their ROI. According to an investor, the biotechnology companies should acknowledge the exit strategy, plan for it, and make sure it is in line with the exit strategy of the VC firm. According to an investor, exit possibilities in the orphan space is not considered as a common issue. A biotechnology company will need to have a relatively detailed plan for what they require and how long time it will take to reach the exit. However, investors also warn that the initial plans always change.

4.2.4.3 Risk

The patterns of discussion regarding risk, relates to ROI and the potential future return, as early stage research projects are entailed by a high level of uncertainty, where companies might be 10-15 years away from releasing a product to the market. Bank loans are not a possible at that point in time, and the success rate among pre-clinical projects is less than a fraction of a percent. Hence, investors need to be sure that the right risks have been assessed when investing in an early stage ventures. One of the subjects mentions how it can be positive to ask the biotechnology companies if they would be willing to invest their own money into the project. If the answer is no, companies should ask
themselves why a VC firm would be willing to invest. Risk is also discussed in a more holistic approach, where subjects claim that they avoid assigning certain risk tables or numbers to the company, but instead look into the entire set of metrics. Experience of the management team in pre-clinical and clinical development, current competition in the market and reimbursement hurdles are examples mentioned in relation to the holistic approach.

4.2.4.4 Financial syndication

Investors also mention that the financial criteria is not solely based on the exit and ROI during venture evaluation. Companies should also consider the next rounds of financing, which also relates to keeping the end customer in mind, as mentioned in the the market criteria. Companies need to consider available financing syndicates for the future round investments. It is explained that the VCs want to hear arguments for future financing rounds given the proof of concept. Considering, if there is a next round investor willing to support their idea and finance for reaching proof of concept.

4.2.5 Knowledge networks

The knowledge network criteria relates to how biotechnology companies can initiate cooperative engagements with other research companies and create additional value for investors. Overall, investors were positive to initiating certain alliances, which is the main theme related to the knowledge network criteria.

4.2.5.1 Alliances

Investors believe research alliances are positive, as the collaborations indicate that companies are involved with what is going on in the market and that they interact with other professionals in the industry. The alliances can be highly attractive when there are well known partners involved. However, the ownership regarding the project, and certain IP rights, need to be clear for the investors. According to an investor “there is a complexity with additional actors”, and it should be handled with care. Due to the resource limitations for early stage companies, the quality of the contracts related to the research or manufacturing for example, need to be considered in detail. During such circumstances, investors recommend that biotechnology companies work with more well known individuals and organizations.
4.2.6 Other cross border aspects

Other cross border aspects include themes and patterns which emerge as additional factors when engaging in cross border settings. Here, coping with the uncertainty associated with investing in unknown territories, is a central theme among the investors.

4.2.6.1 Coping with the uncertainty of cross border investments

When products arise from unknown and new locations, there are some criteria which become more important for investors to consider. For example, investors need to evaluate the team in all aspects to make sure they have not been involved in any negative projects previously. The national and local culture is always important for investors, as they need to know how the individuals behind the team work and think. The location of the company should be to a close proximity of airports so it is easy to travel for the investors. In most cases, investors tell biotechnology companies to find investors in a near location to ease the communication, especially when different time zones become a factor. If the investment opportunities are in a distant location, there is more focus on the experience level of the company, as compared to closer investments.

The legal aspects are one of the greatest risks for investors, as unfamiliarity with local laws and taxes can hinder international investments. The networks become a dependable resource for the investors, as they need to be aware of all associated risks. Not only related to the legal aspects, but also related to the financing or academic research. Co-investments are also quite common. If the investment location is unfamiliar for the international investors, local investors will be necessary to include, as the investors do not advice companies to turn to international VC investors immediately. For example, seed money should always be local before turning to international investors. Also, investors might evaluate the company’s connection to academics. If the biotechnology company is developed from an established academic institute, it is also attractive for the investors.

4.2.7 Balancing activities

The themes related to balancing value activities, include (1) team, and its importance for balancing activities and (2) technology or market orientation, related to how companies should approach balancing. As an investor explained “you only create value in the eyes of someone”, and biotechnology companies should align their activities according to their target. If biotechnology companies have a subjective mindset towards their own research, and believe their product will be the next best thing to solve all problems, the companies will run into some trouble. The delivered value lies in the ability to do something which
is relevant to customers. According to the investors, companies should be aware of that when dealing with investors as well.

### 4.2.7.1 Team

In relation to balancing activities within a biotechnology company, investors stress that “the mix has to be found” within the team. When developing a product, which is optimally positioned for a customer, there is a continuous interaction between the research, as well as the market. As an investor explains, “for biotechnology companies, it is just as valuable to do an experiment, as it is to know what a pharma company wants”. This combination should come together in the management team, where value creation from the lab is discussed, and what you hear from the customers. If these capabilities are not in place, it could be a feasible idea to recruit a member to the board or company and shape the right activities.

### 4.2.7.2 Technology or Market orientation

According to a subject, the research activities, along with the commercial activities, should all come together, and if the companies believe that these aspects are distinct from one another, the companies are missing the point. Although both the technology aspects and market aspects should be balanced, investors will avoid companies which are not considered to be technology leaders within their field of research. As the companies are technology based, their activities should be focused on the research, and on delivering data. As an investor explains, data is greater than networking and communication, so companies need to provide all the information which is related to the research. However, investors also claim that scientists can always make things better, and there is a fine line to what is considered as good enough. Although investors advise biotechnology companies to focus on being great in research, they should also have contact with key opinion leaders from the industry. For investors, it can be positive to find backup solutions if the product candidates fails. In some cases, companies should ask themselves during early stages, if they can detect some discrepancies and rule out their projects. Also, as the time to market is an important factor within the biotechnology sector, companies should make a decision to test their products in the market, as potential revenue can be lost if the research activities continue too long.

Although investors primarily discussed research as the most important element, the ability to know what is happening in the industry, and what customers want, will always be a factor for the biotechnology companies. As an investor explains, “they are not running an academic lab, and they exist to make products, which in the end will make
money”. Also, companies need to consider if they are addressing the right things within their research, as well as their commercial activities, in order to prioritize their activities right. One way would be to work backwards, where investors can sit down with companies and see what is necessary for an exit and define the activities accordingly.

### 4.3 Biotechnology representatives

The following section includes the results for the biotechnology representatives, which includes seven representatives from biotechnology companies or organizations, who have successfully attracted VC. The collected data is structured according to the evaluation criteria, as well as the identified themes and patterns.

#### 4.3.1 Team

In the team category, themes related to the (1) composition, (2) skills and experience, (3) personality, (4) team awareness and (5) international elements of the team were discussed. One subject mentions that the team as a whole, can be seen as a potential risk factor, when assessed by VC investors during evaluation. However, subjects mention that the team criteria is especially important before the proof of concept.

##### 4.3.1.1 Composition

Diversity of the team is highly stressed within the composition theme, where companies look for a combination of different backgrounds and competencies. A biotechnology representative explains that “the investors need to have a sense of feeling for the team”, where they look for a complete team with multiple characteristics. The subjects mention renowned researchers, sales, market, IP, regulatory and business backgrounds as clear patterns within the theme. Top management is further mentioned as an important aspect in early stages, yet challenging for a younger team to set up. The founder is mentioned as a “key person”, and if the founder is not within the relevant field of research, the company should be backed up by other technology leaders in the field. One subject stresses that companies should build a team, and when acquiring external competencies companies should to check and make sure that the qualities are there from the beginning. Networks are also discussed among biotechnology representatives, where companies can check for other research groups to collaborate with, or if there are conferences which could be useful to attend.
4.3.1.2 Skills and experience

One subject mentions that they have objectively presented all the key persons in the company during a proposal, along with their backgrounds, previous employments and experiences. Also, two biotechnology representatives mention that they have highlighted the team competencies related to operational and regulatory activities of how they run a scientific project. Although the scientific factor within the theme is highlighted by the biotechnology representatives, someone within the management team should have the business acumen and experience to drive a project forward. A subject also claims that management experience will be vital when dealing with certain issues related to animal studies. As a biotechnology representatives explains that “there are not many aspects which can be proven during early stages, but talent can always provide results further down the road”. Also, subjects mention that the experience of the CEO is the most interesting aspect to highlight for investors, as VCs invest in the knowledge and credibility of the CEO. However, the experience of the CEO should be supplemented by the rest of the team. Last, it is mentioned that a CEO, with previous experience from running biotechnology companies, will be an important quality check mark for potential investors. The level of involvement among academic professors and founders has been highlighted as an important aspect for investors, where companies need to be clear about the ownership and how involved the professors and founders are. A sense of ownership is stressed among representatives, but in some cases, less involvement from professors and founders can be preferred. Also, as many of the companies are based on scientific grounds, they tend to forget the other aspects related to development, market and finances. Once again, the diversity can limit this gap, by working with individuals with experience from science, industry and start ups.

4.3.1.3 Personality

The personality among the team members, includes patterns theme relates to credibility, and the ability to act and communicate in a trustworthy manner. Also, building trust over time and having a long-term thinking will be positive attributes for an investor.

4.3.1.4 Team awareness

The ability to be aware of what the companies have, and what they need is mentioned as an important attribute. According to the biotechnology representatives, companies should have a realistic image of their own skills, the potential of the project and the financial prognosis for their technology. A sense of realism and the ability to stay grounded
are important during evaluations. Flexibility, and being able to adapt to the terrain is mentioned as another discussion, in relation to the team awareness. Companies can explain what they wish to achieve, but in reality, it is difficult to tell how events are going to occur. Therefore, companies need to have an open strategy, build up a stepwise procedure, and make sure that they avoid walking into a corner. Risk awareness is also stressed as a central pattern, where companies can paint a nice picture of where they wish to end up. However, companies should also be realistic and make sure they avoid promising things which cannot be achieved. A biotechnology representative explained that “you need to be objective, without diminishing your selling points”.

4.3.1.5 International elements

It is stressed that companies should be able to showcase the international elements of a team. For example, showing that the company has team members, who have been outside of their own country during their career. Also, it is stressed that the international aspect of a team has become a bottleneck in Sweden, since the big pharma companies have gradually vanished. According to a representative, it will take a long time before Sweden can build up a strong international human capital.

4.3.2 Product

Central themes mentioned for the product category were (1) the research design, (2) data, (3) innovation height, and (4) communication strategy, relating to how the technology value can be communicated in a simple way.

4.3.2.1 Research design

It is mentioned by a subject that the regulatory procedure is dictated by various agencies. However, the trial design allow for customization. For instance, it is mentioned that companies can design early studies, originally aimed at investigating toxic indications, which can allow companies to measure potential functionality. With this approach, companies can retrieve early hints about the functionality of the product candidate. Last, it is important to carefully evaluate changes in the drug formulation, so that biotechnology companies can avoid re-doing trials due to major changes, which could lead to several years of project delays.
4.3.2.2 Data

One subject mentions how their company often starts their initial communication by showing data, instead of explaining the benefits of the technology to VC investors. With limited results there is no case at all, and data is described as “probably the most significant aspect”. According to a representative, in comparison to having key people within a team, it all comes down to the data. The significance of having conducted a number of studies is also mentioned, as one single study “has a very limited value”. If companies have data from several continents and populations, an investor knows that it will take several years for a competitor to reach this stage. Another pattern discussion related to how companies communicate negative data. Two subjects explain how important it is for companies to be transparent with results, and have an objective mindset toward future possibilities of data. The transparency goes back to being as credible as possible.

4.3.2.3 Innovation height

Uniqueness is mentioned as an important aspect by one of the subjects, where companies should not aim to be an idea among others, but instead they should stand out. Two subjects also discuss strategic focus, meaning that companies should focus on one project at a time, instead of having a number of implications for one technology rationale. Investors want a “simple model to calculate from”. Some representatives notice “how some investors want the next best thing”, but they also know that these investors tend to be well-informed and strong. Also, the technology does not seem to be the most important perspective related to the product, it is more linked to the medical need and that the product solves a medicinal function. Once that is defined, the technology of the product becomes interesting, where companies should show how the technology is protected, how they are ahead of competition, and how they can make money from the product. As a representative explained, “many companies come and say they have a unique technology, great, but to what purpose”.

4.3.2.4 Communication strategy

All subjects discuss various approaches for communicating their technology platform to investors. Companies need to package the message, and target it towards the persons they are speaking with. Investors are aware of what they want and what they seek, and companies should convey their message in a good way. All subjects mention that companies need to make the technology behind the product less complex. The technology should be easily explained and grasped, and as a subject explains, there needs to be a
clear hierarchy in the arguments. Also, companies should avoid mentioning a number of product elements and hope that the investor creates a composite out of this. Instead, they should focus on the most attractive features of the product and communicate these.

### 4.3.3 Market

The market category includes a number of themes, including (1) the end customer focus, (2) commercial fit, (3) market size, and (4) market value. One subject mentions that presenting the market, requires an ability to research a lot of facts regarding the product, need, competition, as well as surrounding companies, which are either potential competitors or buyers of the product. A well defined patient group within the market will be important for VC investors, and preferably as detailed as possible to ensure specified markets and a greater chance to show positive effects. The real question lies in the products linkage to the ROI. If companies are seeking VC funding, they really need to know about the market aspect; if it is vaguely defined, the project will be denied funding. According to a representative, VC funds will have poor understanding of the science related to the product as times, so they tend to focus more on the market aspects. Benchmarking is a method which is mentioned for conducting a market analysis.

#### 4.3.3.1 End customer focus

To understand the end customer focus, companies need to shift their focus from the high technology components, towards solving a practical clinical issue. When discussing the end customer, biotechnology companies need to understand the market, and the development phase they have reached at this point. Once accomplished, companies should ask themselves a number of questions, related to what the market demands, how the company will reach the market, and how a credible approach can be adopted. These steps can happen over seven to eight years. Hence, companies evaluate what the market looks like at a certain point in time. According to the subjects, end customers include specialized physicians, patient organisations and larger pharmaceutical companies. For the specialized physicians and patient organizations, companies need to find and initiate communication with the decision makers, and for the larger pharmaceutical companies, they should look into their portfolios.

#### 4.3.3.2 Commercial fit

A biotechnology representative mentions that they received a number of detailed questions related to the potential market fit of the product. These questions were asked by
investors with prior market knowledge. Market trends are also highlighted by a representative, as the technology trend may have helped the subject to attract investments, within their particular portion of the market. However, by following a market trend, there will be a greater competition, which could lower the value of the company. Furthermore, one subject mentions that the ability to know what will happen in healthcare, and what the trends will look like in five to ten years is important. Companies need to have a long-term thinking, where they consider topics such as means of payment, cultural differences and health economic preferences. There should also be a clear gap in the market, with limited therapies and the product should fill the gap somehow. Working backwards is a great way to actually collect the information and define the project.

### 4.3.3.3 Market size

As mentioned in the theme related to commercial fit, there is a contradiction in relation to following trends, since it leads to significant competition. A biotechnology representative explains that competition within the biotechnology sector does differ in comparison to other industries. One subject actually mentions that it can be a clear benefit to stay away from competing with others. However, a biotechnology representative explains that the size of the market does not have to be significant. In fact, well-defined and small markets are preferred. One subject mentions that companies need to ask themselves how they should penetrate the market, and how long it will take. Also, biotechnology representatives mention that companies can buy market reports and similar services from various companies, or retrieve information about the market by looking into patent databases, publications and recently finished clinical trials.

### 4.3.3.4 Market value

One subject mentions that VCs tend to appreciate numbers, where biotechnology companies should provide a realistic estimate of the market value. Such estimations, however, can be tricky to assess due to the continuous changes in market condition. If companies are seeking VC funding, the investors need to know about the market aspect, and if it is unclear for the investors, the project will be denied funding. Health economic considerations are also mentioned, where expensive treatments with an ordinary effect, will probably not be very attractive for investors. These considerations must take place at an early stage.
4.3.4 Finance

The themes mentioned in the finance criteria include (1) ROI - return on investment, (2) IP, (3) exit strategy, (4) risk, and (5) financial syndication. A biotechnology representative explains that “many biotechnology companies only look at one dimension at a time, but what happens after?”. The whole financial picture needs to be considered and the entire plan from pre-clinical, phase 1, phase 2 and exit needs to be in place. According to e biotechnology representative “Companies need to do their homework” and define all activities, financial needs, and future plans for money allocation. Only then can you make a true assessment of the product value.

4.3.4.1 ROI

According to biotechnology representatives, it is challenging to discuss the value of a company with investors. This is discussed by a majority of the subjects, and this is especially true for young companies. It can also be difficult to discuss the ownership structure, where the investor might have a predefined model for estimating the value and shares, while the founders of the company prefer to maintain most of the ownership. A way to understand and estimate the potential ROI, can be to benchmark the company against similar actors in the market. Without a point of reference, the estimation can be very difficult. The ROI will be the key driver for VC investors when looking at the financial potential of a product. However, the demand will depend on the product, the company goals, and the investment amount. As a biotechnology company, the ROI assessment can be done by talking to key opinion leaders in order to get an overall understanding of the financial aspects of the project. The ROI predictions are rarely precise, and the high returns that many biotechnology companies predict are too high, while the returns that VC investors predict are too low. Also, geography can play a big role when it comes to company value, where valuations in the US are generally higher than in the EU.

4.3.4.2 IP

In terms of protection, the IP needs to be firm and solid, and more importantly, there will be several opinions to take into consideration when dealing with the IP. As the IP side can differ from project to project, the VC investors will rely on several second opinions when evaluating its protection. The important aspect will be to have a thought out plan, which incorporates input from developers, investors, and lawyers. The composition of
matter, which covers the molecule will also be evaluated, so the patent situation needs to be secured, and compared to other competing patents.

### 4.3.4.3 Exit strategy

One subject mentions that companies need to have a clear exit strategy, and be aware of certain opportunities. Also, companies should align the exit strategy of the company with the investors, so that plans regarding future merges and acquisitions are agreed upon by both sides. This aspect becomes especially important, as the investors have a set time of existence. As a biotechnology company, there should be an understanding that the VC funds invest in the company over a specified time, and within that time they will want to see an exit.

### 4.3.4.4 Risk

There are a number of pattern discussions related to risk. First, a representative mentions that companies will need to plan their investments, as well as additional investments. Also, the companies should be as transparent as possible and be aware that they are working in a complex sector. Also, it is important that biotechnology companies are clear and honest about their incurred costs, and communicate when the project becomes more expensive than planned. A focused product strategy is mentioned as a potential benefit when interacting with investors. This element is an assurance that the money will be allocated to the project they are actually investing in, and not for administration costs in a different project. If companies can provide information, which shows that the risks are lower than the average project, it should be highlighted to the investors. A high risk project will automatically decrease in value by a certain factor. Last, two subjects mention that biotechnology companies should understand the consideration of failure. Risk refers to failing studies, but also failing in proving an effect which is sufficiently good. Also, if companies overestimate the future financial returns, a positive return can still be a major failure.

### 4.3.4.5 Financial syndication

According to biotechnology representatives, “companies and ideas are really not funded by VC directly, you need to find financing elsewhere early on”. The importance of local financing is needed for biotechnology companies, but also for VC investors, who actively look for new ventures. During these financial syndications, representatives highlight that the investors should be in similar investment stages, otherwise complications can be
waiting down the road. Furthermore, biotechnology companies should be careful with having too many co-investors, as they all need to be on the same page and work together during the project.

### 4.3.5 Knowledge networks

The themes mentioned in the knowledge network criteria include relates to the alliances which biotechnology companies can establish to create additional value through collaborations, and subsequently communicate the value to VC investors.

#### 4.3.5.1 Alliance

Alliances are necessary for biotechnology companies. The most important aspect of including new partners, will be to conduct research and evaluate their competencies, quality of previous studies and networks. If companies are directing their product to broad and international customers, the networks will be important to emphasize for an investor. For some companies, which are smaller in nature, the founders will have a major part in the alliances which are highlighted towards investors. A CEO explained his philosophy related to transparency of research alliances, which includes that “the more transparent you are regarding your research networks, the better it is”.

Alliances in biotechnology are quite common, but the degree of alliance openness is discussed as a vital element related to the research and data generated. According to a representative, too many early partnerships can have a negative impact on the company, as larger companies are excellent to exploit the information and data. A recommendation from a biotechnology representative is “to identify one maybe two partners and focus on them to learn as much as possible”. If the alliances are formal in nature, it would be important to communicate the collaborations as they can strengthen the case for attracting VC. However, although informal alliances can be positive, they might not contribute as much information and height for the project. The collaborations need to be healthy and provide significant value. In certain collaborations, biotechnology companies may give away too much ownership, and that in turn is an aspect to be wary about.

### 4.3.6 Other cross border aspects

The cross border aspects are highly interesting among the interviewed subjects. As a CEO explained, “all companies have to think internationally from day one”. In Sweden,
for example, there is only one pure VC fund left, and although Denmark has more funding options, companies are required to attract cross border investments.

4.3.6.1 Coping with the uncertainty of cross border investments

As a global industry, the subjects do not believe the investment criteria differs from other locations and the investment approaches are the same. The important aspect relates to the technology and market potential. If those aspects are missing, there will be no deal. As a CEO explained, “it has nothing to do with the country or location”, instead the people who are experienced in the industry look for their specific criteria. However, it challenging for smaller companies to attract international VC, and in many cases, the VC funds aim to invest in geographical areas with close proximity to their locations. According to a biotechnology representative, it is always easier to have all stakeholders in one place, speaking the same language. The small differences really make an understandable impact on VC investors, as they want their work to be interesting, but easy as well. As a VC investor, you want to have people in the locations where you invest, so that the goals of the fund are considered within the projects. If these conditions are impossible to reach, accessibility will be considered. The language, culture and the way companies work will however remain a challenge if the geographical locations are different.

Syndication is also mentioned as the most vital component when dealing with cross border investments. Co-investments will allow companies to deal with the risks related to the biotechnology sector, however, there is a larger threshold when dealing with international investors. Therefore, the first question from VC investors will be: “who is your local investor?”. The cultural, legal and other complex differences may arise, and it is a big step for companies. If biotechnology companies do go abroad for attracting investments, it is recommended to have a relationship with a trusted advisor from the country. Furthermore, it is advised to travel to the international location, as the investors will not make the trip over to see you. As a biotechnology company seeking funding, you need to stay active.

4.3.6.2 Cultural differences

When looking at the different investors, American investors are always popular and generate value when companies seek additional investors. It shows that the biotechnology company has reached a global network, which will make the project very strong. The reputation among VC investors will always have a major impact, and a well established American fund will be valuable. However, as mentioned by one of the subjects, companies
should consider that American VC funds are driven by their exit, so it puts pressure on the biotechnology company to meet their expectations. Overall, there are more experienced investors in the US, in comparison to the EU, which makes the American market more dynamic.

The mentalities among VC investors will also differ when related to cross border investments. As a biotechnology company, it is positive to be exposed to these differences at an early stage. A biotechnology representative explains that in Sweden, the investors can be friendly in nature, while investors in the US and the rest of Europe “can be more cutthroat”. Although these elements can be discouraging, biotechnology companies should consider that the VC investors are responsible for capital, which belongs to someone else. In many cases, international investors know what they want to invest in and how they want to achieve it.

4.3.7 Balancing activities

According to a biotechnology representative, the ability to balance activities are critical for biotechnology companies, as there are examples of companies, which develop products for a market that does not exist. As a biotechnology company it is vital to make an interesting story for all stakeholders, and it should not be overwhelmingly technical. There are several examples of companies, which choose to highlight the technology excessively. Instead, the technology should be emphasized as more than just a high technology product. As another biotechnology representative explained, “there needs to be a balance between the scientific data and how you explain the data in a reliable format”.

4.3.7.1 Communicating value

The greatest challenge will be to define the value within the company, and there should be an understanding of what the company is trying to do to add value. As a subject expressed, “you cannot just sell something superficially, you need to have a clear ‘why’”, which refers to the technology. According to a representative, technology always plays a secondary role, since it makes up the rationale for the case. Also, another subject explained that “the technology is important, but when you are involved in the sale of a product, the market perspective is the main sales argument”. The reason for a product to work successfully, relates to the technology behind it. However, when communicating with investors, companies are not selling a high technology product, but rather a market value of a product. The ability to deliver market value relates to the generated data, and it all comes down to the communication and making sure that the communication represents what the companies actually sell. A biotechnology representative also highlighted
that biotechnology companies should focus on their communication skills, to involve all stakeholders in an clear and effective way.

4.3.7.2 Team

Also, the team aspect will be important for the project, and in many cases the CEOs will hire a Business Director. However, in the end the CEO bares all the responsibility, and needs to understand the science, as well as the market aspects beyond. According to a representative, investors wish to see that there are limited disagreements within the company. Partner research can also be helpful to somehow balance the activities and expand the patent portfolio and IP strength.

4.3.7.3 Technology or Market orientation

Although some biotechnology representatives would focus on the market, other representatives believe the technology aspects provide the major value for the selling product. In some cases, biotechnology companies might miss the market components, while investors find a potential and follow through with the investment anyway. The VC investors within biotechnology always want the research to move forward, and they often want to see that the companies focus on the right activities. When they see progress in the research, it often leads to re-investments for the future. As another subject explained, “too much focus on the market will not be enough, but you always have to consider it when communicating with the investors”. According to some representatives, companies should be focused on the science in earlier stages and transition to the business development aspects during later stages. As both areas are important, companies need to be engaged in attracting or at least communicating with VC investors at an early stage to ensure an ongoing development. Furthermore, the development plan should have a clear path, all the way from science to the ROI that investors will seek. The company should also be realistic about the technology when they communicate with investors. In comparison to previous years, presentation related to the market and vision of the biotechnology companies, have become more common. In previous years, industry professionals did not believe that the time and money invested in researching the market was delivering the right value.

A biotechnology representative also explains that CEOs often need to focus on the financial aspects during presentations, and create great financial calculations. However, these calculations will not be used, and it is sometimes better to outsource these tasks to external consultants.
4.3.7.4 Trust

Another aspect, which is lifted among the subjects, includes trust. A biotechnology representative explained how certain companies can fail due to lack of trust within or outside the company. The team aspect is once again an integral part of the company, as the need for individuals, who understand risks, pitfalls, market, and have the ability to think towards the future and outside the box, will be the best way to develop trust. However, a biotechnology representative explains that it is rare to have all aspects in place during early stages of a biotechnology company.
Chapter 5

Deductive analysis of interview data

As highlighted by Patton (2002), a next appropriate step in the analysis is a deductive section to test and affirm the authenticity of the inductive content. As several subjects from two different subgroups have been interviewed, the deductive section will discuss and analyze the themes and patterns from the inductive section, to eliminate certain deviations in the conclusion. The deductive section will include a discussion for each evaluation criteria. First, the discussion presents the major findings within each evaluation criteria. Second, the discussion includes the contradictory answers found within (1) the investor subgroup and (2) across both subgroups.

As the VC investors make the final decisions regarding investments, the investor subgroup will be considered as the primary source of data. Hence, the analysis only includes themes and patterns which are prominent and conclusive among the investor subjects, or the themes and patterns which are clearly discussed within both subgroups. Therefore, the themes and patterns, which solely emerged within the biotechnology subgroup, are not considered in the deductive analysis.

Section 5.1 will present the deductive analysis of all evaluation criteria. Literature from the review presented in Chapter 3 will be consulted, in order to better understand contradictory findings. In Section 5.2, the different themes found within the balancing activities aspect will be analysed.

5.1 Analysis of evaluation criteria

The following section will present the deductive analysis for themes found within all evaluation criteria. Here, the significant themes for each criteria will be presented, followed by a separate subsection for each theme containing flaws or contradictions in the data.
5.1.1 Team

The content analysis of the team criteria included agreement among investors within a few themes. For instance, the composition of the team was a widely discussed among the subjects, where the common patterns of discussion included diversity, along with the roles within the team related the founder and the CEO of the company. In relation to the skills and experience of the team, a few subjects discussed the ability to “drive a project forward”, which was further emphasized by both subject groups. According to the subjects, skills and experience further relates to merits and reputation, along with business acumen. These statements are reflected in literature, where Rhyne (2009) sheds light on the need for a diverse team including technical competencies, as well as keeping the eyes on the horizon. The team awareness was also a prominent theme, where there was a common agreement on the point of “knowing what you have, and what you need”. Furthermore, the theme included some patterns related to risk awareness and having a realistic view on the capabilities within a company. Showcasing flexibility in one’s strategy was emphasized among both groups of subjects. An additional interesting pattern, included that investors preferable see an international team, in terms of language as well as experience.

5.1.1.1 The relative importance of the team

Although the research team has been highlighted as an important criteria among investors, there are certain subjects who specifically explain that the team can be replaced and that resource issues can be dealt with during later stages. This statement is partially in line with Baeyens et al. (2006), arguing that management capabilities become more prominent during later stages. The seemingly high expectations on the team, and the variety in preferences among the subjects, might thus to some extent be explained with the fact that certain parts of the team become prominent during later stages. While certain investors explain that the CEO needs to have a scientific background, mixed with the skills and experiences from driving a project forward, other subjects explain that the CEO needs to have skills, which matches the project need. Needless to say, the team always has a specific role within the project, but can, and in most cases will, be replaced in the future. When comparing the responses to the biotechnology subjects, the patterns are similar in nature when referring to the composition, skills and experience, personality and dynamics, team awareness and international elements. However, there are no discussions related to how the team and CEO can be replaced in the future. According to Baeyens et al. (2006) management “is a more important factor for later stage investors than for early stage investors”. Therefore, the relative importance of the team is highlighted as an interesting pattern within the Team criteria. In the quantitative
research study by Jung et al. (2011), the team criteria scored third, which might indicate that the team criteria might not be the most prominent evaluation criteria.

5.1.1.2 Personality

Both subject groups describe the personality features of the team. However, the VC investors focus on team interactions and features, such as a team getting along well with likable individuals. The patterns within the biotechnology representatives tend to focus on building credibility and trust, which better describes relations which are geared more towards investors, rather than the team. The patterns may indicate an interesting difference in perspectives, related to what investors tend to highlight, and what biotechnology companies communicate. In relation to this it is also interesting that the majority of the biotechnology subjects described the significance of communicating the technological aspects in a tangible manner, and target it towards the VC investor. Again, there is a clear focus on the communication and relation to investors, rather than on the technology itself. Furthermore, it can be noted that categories labelled as “trust” and “mentalites” emerged among the biotechnology representatives. There seems to be a strong emphasis on building trust, and attempt to connect to the investors in the best way possible. This finding may not appear strange on its own, since communication and trust are essential capabilities for understanding the value of the company and making a fair assessment of the risk. It is however interesting to take note of the differing focus among the biotechnology representatives. This focus could be a result of difficulties associated with communication and understanding the two groups, or it could relate to limited insight among the biotechnology representatives into the significance of these themes.

5.1.2 Product

For the product criteria, three central themes can be found, which both subject groups highlighted. These are data, innovation height and IP. Data was discussed within the patterns of quality, which relates to being transparent with results, and further with respect to the mechanism of action, which emerged as a central concept. Innovation height was described in terms of having a more focused strategy, where companies should focus on one product implication instead of several ones. Also, the innovation height included patterns related to competition, where the novelty lies in the ability to stay ahead of competition. These findings are difficult to associate with existing literature, as they are not discussed. Jung et al. (2011), argues that the product and the novelty of the technology is inferior to the competition on the market and the benefit over
potential competitors. Further, Jung et al. (2011) states that the product criteria is underestimated. In this study, data and the product criteria are mentioned as the most significant, among biotechnology representatives and investors, respectively. Thus, it may be true that the product criteria is somewhat underestimated. The novelty of technology would not yet make sense unless there is a market, and that you are well positioned with respect to competitors on this market, which follows the line of reasoning in Jung et al. (2011). Thus, the technology and the generation of sufficient data are indeed significant. However, companies need to have a systems perspective and keep the entire picture in mind when discussing the various criteria separately. Thus, in line with the responses of the subjects, the product criteria is a significant criteria, as long as you create technical value for a market, in which you are well positioned. IP rights were also considered to be important, where the discussion patterns embodied IP as a “check mark” among investors, when assessing the biotechnology companies. The significance of the IP rights are again in line with Ranade (2008) and Baeyens et al. (2006) IP was also discussed by the investor sub group in terms of the geographical markets.

5.1.2.1 The subjective nature of assessing products

The product criteria is an interesting criteria to discuss, as the subjective evaluation and preferences among VC funds will always drive the investor interests. As mentioned by several subjects, the subjectivity related to the product provides another dimension for biotechnology companies to do their research prior to meeting investors. As there are certain VC funds with specific preferences, it might not always be clear in what type of products VC funds actually invest in when the companies seek funding. When comparing the two subject group responses, a biotechnology professional highlighted how the communication needs to be targeted to the investors you are speaking to. According to research by Ranade (2008), the product criteria can be viewed as the most valuable factor for investors, however, results from Jung et al. (2011), explains that VC funds primarily want to stay ahead of their competitors, rather than including the most unique products within their pipeline. These patterns indicate how VC funds have specific guidelines to follow, which may have to be considered by the biotechnology firms when seeking VC funding.

5.1.2.2 Research design

The research design related to the product category is discussed among both groups, yet expressed in different ways. The VC investors discuss the research design in a larger scale, where they tend to focus on the overall scope and quality of the design, relating to
the experience of the team. The biotechnology representatives tend to provide detailed responses regarding the actual design and modifications of the product candidate. Hence, it seems that the research design is a significant element, but viewed in two different perspectives. The patterns can be interpreted as a gap between the two groups in terms of perspectives.

5.1.3 Market

Overall, there were agreements within the different themes related to the market criteria. End customer focus was mentioned by several investors, where the patterns of discussion related to how companies should incorporate needs among potential future buyers and stakeholders. End customer focus was also mentioned in terms of having a geographically diverse approach towards analysing and connecting to end customers throughout the project. Commercial fit and having a focused strategy was also discussed, where it was mentioned that companies should be aware about their market fit, which should include a clear gap to be filled with an added value. These findings are also reflected in the work by Ranade (2008) and Baeyens et al. (2006), were questions are asked in relation to potential future customers, as well as the value created by the company. An additional theme, which was mentioned among both subject groups, related to how companies should work backwards, by starting with the commercial picture in mind. The market size was discussed in terms of patient fit and competition, whereas the market value theme included patterns of health economic considerations, where pricing was a key element in relation to competition, market size, and medical needs. Jung et al. (2011) argues that the findings in his study indicates less significance in the market size criteria, which is not fully in line with previous studies. This study argues that market size, along with the market value are significant, and should be targeted in early stages, as mentioned by Jung et al. (2011).

5.1.3.1 Following trends

The most significant difference in patterns, within the market category related to trends in the market. Both groups agree that biotechnology companies should try to understand the trends of the future. However, in regards to current trends there are contradictory opinions. Some subjects claim that following trends will not make sense for VC investors, as the trending therapies should have been invested in years ago. However, the patterns among the biotechnology representatives indicate that investors might think it is positive to conduct research within a trendy area. These contradicting patterns from the subject groups can be related to the experience from the biotechnology representatives, where
trends might have been positive for certain industries, whereas the common practice for investors would be to avoid investments based on current trends.

5.1.4 Finance

For the finance category, there were agreements on the major themes related to ROI, exit strategy, risk and financial syndication. Risk and return were the most discussed themes. One interesting finding in relation to the theme of ROI, concerned the return on capital, which was considered as a difficult subject to discuss between investors and biotechnology companies. For instance, it is mentioned that it can be hard to grasp how investments are intended to increase the value of companies with more than the invested amount of money. Furthermore, company valuations can be a topic of concern, where differing views on value can complicate the dialogue between the two subject groups. Both subject groups mentioned that a point of reference, or benchmark, can be a positive start for estimating the value of a company, and thus also potential future returns. Furthermore, the risk and financial syndication themes were also considered by several interview subjects. Risk was discussed in terms of time to market, as well as the significance of planning for investments. Experienced management is mentioned as a way to cope with risk, which again is in line with a previous statement, where the team is highlighted as a risk factor among the biotechnology representatives. Also, the biotechnology representatives urges early stage companies to define risk in terms of failure, as well as performance below the expected standard. Concerning the financial syndication theme, next round investments, along with local syndication with international investors are discussed as considerable patterns. The themes found within the finance criteria are well aligned with literature, where themes and patterns such as financial plans, together with time and exit considerations, are mentioned Baeyens et al. (2006). Further, next-round investments are stressed in previous literature (Jung et al., 2011).

5.1.4.1 Changing exit plans

A number of pattern inconsistencies can be found within the exit strategy theme, where some subjects state that there should be a detailed exit plan in place, whereas other subjects mention that biotechnology companies should solely showcase their thoughts related to the exit. Several subjects have mentioned that plans always change within biotechnology, where there is a clear pattern related to how companies need to be flexible with their exit plans. What can be said about the exit strategy, is that there should be a plan and a certain commitment towards the exit. However, the detail level related to the exit plan and degree of flexibility, cannot be concluded from the interviews. One might
also ask if that trade-off is of relevance at all, since the essence seems to be that you should agree upon some exit in the end, and that venture capital entities wants to see that you commit to that plan such that there can be a future return on the investment. Having an exit plan is, as stated above, supported by the work of Baeyens et al. (2006) and Jung et al. (2011).

5.1.5 Knowledge networks

The knowledge networks criteria was moderately discussed among the subjects, partly due to a limited number of responses to the question. However, when discussed, the responses showed patterns related to the quality of potential partners, and further elaborated on issues regarding ownership and IP rights. This finding is partially reflected in the work by Jung et al. (2011), stating that informal networks are preferred during early stages, as they allow for a flexibility during resource scarce stages of company maturity, and limit various legal aspects due to the informal nature of the collaborations. The biotechnology representatives discussed practical issues, such as the size of partner companies and potential pitfalls from working in larger alliances. Also, it should be noted that knowledge networks were not emphasized as critical elements for the evaluation process. Instead, subjects explained that research alliances could provide a benefit, as long as the ownership structure and legal contracts were clear. Altogether, the limited responses related to this particular criteria provides limited value for the content analysis, and impairs potential conclusions on the actual significance of the criteria. It should be noted, however, that networks in general, was a more frequently discussed theme. For instance, the role of having a network of industry professionals within the VC funds, along with the biotechnology companies having networks of end customers and relevant stakeholders, were mentioned a number of times. Hence, networks should not be mixed up with knowledge networks, which only concerns R&D alliances.

5.1.6 Other cross border aspects

Interestingly enough, several subjects mention that the evaluation criteria are the same for investments within close proximity to their office locations or cross border investment. Instead, there are additional factors related to cross border investments, which can be highlighted as separate themes. It seems like the initiative in Nunes et al. (2014), towards implementing a category containing “other” criteria, might be a valid approach. The location was a recurring theme among investors, where the patterns indicated that investors prefer familiar locations or locations which are close to travel connections in order to facilitate travel for the investors. One subject explained that it all comes down
to very simple elements which are important for cross border investments. Another re-
curring theme included patterns of unfamiliar systems and how investors cope with the
language, national culture and legal aspects. These findings are reflected in the work by
Wright et al. (2005) and Bruton et al. (2005). In order to overcome these challenges, net-
works and co-investors were crucial for investors when engaging in new ventures. Locally
based VC personnel is again reflected in the work by Wright et al. (2005).

5.1.6.1 The impact of location

As mentioned, there are specific patterns of discussion related to the location of the tar-
get country. However, whether or not the actual location matters was left unanswered.
Investor subjects say that geographical proximity and accessibility is beneficial. Accord-
ingly, parts of the biotechnology representatives agree upon this, whereas some say that
it has nothing to do with location in the end. An investor explained that distance re-
quires experienced teams, whereas a less experienced team will need more monitoring
and advice. Thus, one might need to consider other features of the company settings in
order to understand the significance of the location. In Nunes et al. (2014), it is claimed
that the location of investment is less significant when considering a firm which has
become internationalized. Hence, there can be a relation between the extent to which
the investor subjects are internationalized, and the significance of the location. There
are differences among the subjects for this criterion, which therefore makes it a possible
explanation to the results.

5.2 Analysis of balancing activities

When discussing the ability to balance company activities, a few themes emerged related
to the team, and its interaction with the product and market. In order to balance
activities within a company, the team needs to find the right mix of people, with limited
disagreement among the members. Also, the management team, along with the CEO,
need to have a good connection with the VCs. The connection includes the ability to
communicate what you sell, and try to create subjective value for all stakeholders. When
discussing balance activities with the subject groups, certain trade-offs were highlighted
related to balance between the team and product, as well as between the product and
market.
5.2.1 Team and product

Among investors, data has been mentioned as a more important theme in comparison to having key people in a team. This pattern is further supported by the biotechnology subjects when discussing the product criteria. Thus it seems like the product, and particularly the data is valued higher than the team features. However, it can be hard to evaluate this in relation to previous statements regarding the team criteria on its own, which are highly prominent within the value balance discussion. In Baeyens et al. (2006), the team criteria has slightly more value than the product, which leads to challenges for understanding the results from literature.

5.2.2 Product and market

The core of the discussion regarding balancing value activities lies in the balance between the market and product criteria. Here, no clear conclusion can be drawn, since none of the criteria seem to make sense on their own, according to the responses. However, subjects from the investor side have claimed that it is important to know that you are running a company, and not an academic lab. Another fact, which should be in place, relates to that biotechnology companies need to be the technology leaders within their field. Yet, they also need to find a point where the product and technology is considered to be good enough, so that the time to market will make sense for an investor. Some subjects claim that companies should not focus on the market too much, but use it as means of communication with investors. Lastly, some claim that focus of activities depends on the company stage, where early stage companies should be focused on science, and late stage companies should be more geared towards business development. However, biotechnology companies should start with the commercial picture and work backwards. Both groups however seem to agree that establishing early contacts with key opinion leaders and investors is a good thing. This intricate act of balancing market and product is further reflected in the fact that investors give inconsistent responses regarding the detail level of strategic planning. What can be said from previous answers, however, is the agreement regarding the significance of data. Hence one might say that technology is critical for having a company at all, and that a market fit is a necessity for being attractive among investors. The requirements on market focus, and more specifically the expectations on how much has to be prepared beforehand, seems to be more of a preference for each and every investor. Again, you need to put effort into understanding how you can create subjective value for a particular investor and setting.
Chapter 6

Discussion

6.1 Discussion of findings

In Table 6.1 the results for the different criteria, themes, and central patterns are presented. These are the conclusive findings of the study, which the authors believe answer the outlined research questions. From the deductive analysis, the major elimination included the knowledge network criteria. Interestingly, the knowledge network criteria was not portrayed as a main determinant among the evaluation criteria. Previous literature on evaluation criteria in the biotechnology sector have emphasized the importance of this particular criteria, meaning that there can be a slight disagreement between this research and previous studies. No conclusions can however be drawn in relation to the significance of the criteria, due to a limited sample size supporting the data rationale. Among all themes found within the other evaluation criteria, personality and research design were eliminated due to inconclusive discussions regarding the significance of the themes. Additionally, a number of patterns in the investment subgroup have been excluded. The patterns related to following trends, the detail level of exit plans and the implication of the distance when investing in a different country. Also, communication strategy, US markets, mentality and trust, have been removed since these themes were only discussed within the biotechnology subgroup. The results presented in Table 6.1 are considered as conclusive results from the study.
### Table 6.1: Conclusive results

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<th><strong>Team</strong></th>
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<tr>
<td>Composition</td>
<td>diversity related to research and market with significance of CEO and founder</td>
</tr>
<tr>
<td>Skills and experience</td>
<td>to drive a project forward with previous positive merits and reputation diversity in all possible aspects</td>
</tr>
<tr>
<td>Team awareness</td>
<td>regarding abilities and needs within the team regarding risks of the project with strategic flexibility in company</td>
</tr>
<tr>
<td>International team</td>
<td>with diverse language skills with experiences from international settings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Product</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data</td>
<td>with good quality including the mechanism of action</td>
</tr>
<tr>
<td>Innovation height</td>
<td>with a focused strategy of the product to stay ahead of competition</td>
</tr>
<tr>
<td>IP</td>
<td>as a check mark consideration which is internationally incorporated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Market</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>End customer focus</td>
<td>with the need for future stakeholders in various geographical locations</td>
</tr>
<tr>
<td>Commercial fit</td>
<td>including a focused approach by working backwards for future trends</td>
</tr>
<tr>
<td>Market size</td>
<td>including the right patient fit</td>
</tr>
<tr>
<td>Market value</td>
<td>in relation to the health economy and a relevant pricing strategy in relation to the competition</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Finance</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>General contributions</td>
<td>where general evaluation criteria are similar</td>
</tr>
<tr>
<td>ROI</td>
<td>is difficult to discuss between groups with realistic evaluations</td>
</tr>
<tr>
<td>Exit strategy</td>
<td>with an incorporated plan includes commitment to exit</td>
</tr>
<tr>
<td>Risk</td>
<td>with plans for investments require experienced management is challenging to define</td>
</tr>
<tr>
<td>Financial syndication</td>
<td>for next rounds of financing</td>
</tr>
</tbody>
</table>
Other cross border aspects

| Impact on evaluation criteria | general evaluation criteria are similar |
| Location                      | includes language barriers              |
|                              | requires knowledge of legal aspects     |
| Uncertainty                   | leads to understanding the culture      |
|                              | requires solid networks                 |
|                              | requires local co-investors and seed money |

Balancing activities

| Team                          | mix has to be found within company       |
|                              | requirements of management and CEO       |
| Communicating Value          | includes creating subjective value       |
| Product vs Market orientation| to establish contact with key opinion leaders |
|                              | should focus on being technology leader  |
|                              | where product is required for company    |
|                              | where market required for investors      |

6.2 Thesis purpose linked to process

The purpose of this study was to identify specific evaluation criteria, which VC funds use to assess early stage and cross border ventures in the biotechnology sector. To re the specific purpose of the study, the study aimed to answer the following key question:

1. What are the industry specific, and cross border evaluation criteria, which VC funds use for the biotechnology sector?

To address the key question, a detailed literature review was carried out, and led to an emerging theoretical framework, which incorporated (1) general evaluation criteria, (2) industry specific evaluation criteria, and (3) cross border investment criteria. Also, when assessing these three areas in literature, an additional research question emerged. The additional research question, which was incorporated into the study, was as followed:

2. How can biotechnology companies balance their activities to successfully attract international venture capital?

After identifying evaluation criteria related to investments from existing literature and creating the theoretical framework, the study tested the framework on certain case sample groups. The case sample groups were (1) the investor subgroup, which included seven international VC investors, and (2) the biotechnology representative subgroup,
which included seven biotechnology representatives. The findings from the cases, led to an inductive analysis of the generated data, where certain themes and patterns were identified within the evaluation criteria framework. The inductive analysis transitioned into a deductive analysis, where the criteria, themes and patterns were interpreted and analyzed once again, to clarify the conclusive findings and eliminate any deviations from the findings. The results were presented from the process and included the concluding themes and patterns related the evaluation criteria. Also, the results included an additional finding related to the balancing of activities. The overall findings were derived from using a systematic combining research design, which allowed for a flexible approach towards the study. Therefore, the findings were incorporated from all four elements of systematic combining, including theory, framework, the case and the empirical world, as suggested by Dubois and Gadde (2002).

6.3 Limitations

Following section will elaborate on the limitations of the study, including the design of the research, the collection of data, along with the subsequent analysis of the data.

6.3.1 Research design

The main reasons for conducting the study were to research the evaluation criteria which international VC funds use to evaluate biotechnology companies, and try to address the certain practical challenges biotechnology companies can face when attracting venture capital. Also, as literature indicated certain limitations in research related to industry specific criteria and cross border criteria together, the theoretical reasons for delivering an academically relevant study became evident.

To address the practical and theoretical components of the study, a unique research design was incorporated, due to the findings from various practical events and literature related elements. These components led to the use of systematic combining research design, which allowed for matching certain components together and re-directing the thesis throughout the process, as highlighted by Dubois and Gadde (2002). The outcome from incorporating the systematic combining research design, led to a more positive process of finding new information, and have the support for incorporating it into the study. Although the systematic combining led to a more flexible research design, without strict regulations on how to conduct the qualitative research study, there were also certain limitation areas for the process. These areas are addressed below.
6.3.2 Data collection

The limitations of the data collection will be discussed in relation to the sample, as well as the limitations entailed by the semi-structured interviews.

6.3.2.1 Sample

The case samples included (1) VC investors and (2) biotechnology representatives, where the subjects were selected with purpose. Although the VC investors were considered to be homogeneous in nature, certain preferences and focus areas led to a deviation from the initial plan. As VC funds have different structures and differing preferences, the investors are not considered a homogeneous group of subjects. Therefore, the limitation is acknowledged, but as biotechnology companies will be engaged in attracting VC funding from various investor types, the answers and generated results are considered to provide significant value.

6.3.2.2 Semi-structured interviews

Researchers explain that a main challenge for semi-structured interviews relates to the interpretations of the answers to the open ended questions. The use of the interview structure is recognized as a potential limitation of the study, and to address this limitation certain steps were incorporated into the study. The interviews took place in various forms, including in-person interviews, as well as digital and phone-based interviews. All interviews were recorded and transcribed to retrieve all aspects of the conducted interviews and a discussion regarding the interpretation were followed after the interviews.

6.3.3 Analysis

The inductive analysis included all data from the interviews, where the content had been structured into certain themes and patterns. The inductive analysis included the open coding of the data, which was carried out for both of the subgroups. Next, in the deductive analysis, the validity of the results are analyzed and a number of constraints were applied. First, the investor subgroup was considered as the primary source of data, since this group will make the final decision regarding the investment. As explained in the deductive analysis, the discussion only concerned themes and patterns which were prominent and clearly conclusive among the investor subjects, or themes and patterns, which were mentioned by both subject groups. Altogether, the conclusion of the study did not include (1) inconclusive criteria, themes or patterns within the investor subgroup,
(2) inconclusive criteria, themes or patterns between both subgroups, or (3) criteria, themes or patterns which solely emerged among the biotechnology representatives.

Although Dubois and Gadde (2002) argues that research with limited preconditions, can run a risk of not providing relevant information, they also explain that these problems can be avoided by incorporating activities and steps which are planned and executed in a structured way. The analysis followed recommendations presented by Patton (2002), which explained that a deductive analysis can follow an inductive analysis in a qualitative analysis approach, in order to confirm the results and eliminate certain deviations. In alignment with these recommendations, activities and steps related to the study were planned and executed in a structured way. Thus the limitation of the analysis were addressed throughout the study.

6.4 Contributions

The practical contribution of the study, includes delivering a research study on evaluation criteria, which can provide guidance and practical insights for biotechnology companies seeking international venture capital. The practical insights primarily stem from international VC funds, as well as, regional biotechnology representatives, who have been engaged and successfully attracted previous venture capital. The study is primarily geared towards stakeholders within the biotechnology sector in Skåne and Sweden.

The academic contribution includes delivering a research study which builds on literature related to evaluation criteria, by incorporating the elements of (1) industry specific evaluation criteria related to the biotechnology sector, and (2) cross border specific evaluation criteria. Furthermore, the element related to how biotechnology companies can balance their activities to attract venture capital, provides an additional height to the study.

6.5 Future research

As literature related to evaluation criteria is fairly unexplored, there is room for additional research initiatives related to the topic. After conducting this study, it is believed that the following areas for future research could be explored in more detail:

1. A quantitative research study related to evaluation criteria, carried out in a cross border and industry specific context. In such a study, a replication of this particular research study with additional subjects could be of interest.
2. A research study solely focused on other evaluation criteria, which might arise as a result of cross border investments. Since the findings from this study comply with previous literature, it might be interesting to focus on the criteria related other cross border factors, and especially those related to network effects.

3. A research study related to the mentality differences between biotechnology companies and investors, where case subjects could include early stage biotechnology companies, which have not succeeded in attracting VC and international VC investors.

4. A research study related to the team criteria, and more specifically related to the highlighted theme of composition. A suggestion for a research question to address relates to the right combination of team composition.

5. A research study related to the knowledge network criteria, and its role in cross border investments within the biotechnology industry. Since no conclusions can be drawn in this particular study regarding the knowledge network criteria, it would be of due interest to further research the topic, and especially in relation to earlier studies within the biotechnology sector.
Chapter 7

Conclusions

In this study the evaluation criteria was presented from literature related to (1) general evaluation criteria, (2) biotechnology specific evaluation criteria, and (3) cross border specific criteria. Also, literature suggested to incorporate the relative importance of evaluation criteria, which led to findings related to balancing company activities to meet the certain evaluation criteria which VC funds seek.

From the study, the findings support criteria related to the \textit{team, product, market, finance,} and \textit{other cross border aspects}. Hence, the findings are in line with earlier literature on general evaluation criteria for all industries, and cross border specific evaluation criteria. Knowledge networks was the only inconclusive criteria, which was unclear from the collected data and inconclusive compared to previous literature on biotechnology specific evaluation criteria. Themes and patterns which are found significant and conclusive within each of these criteria are specified in table 6.1.

The balancing of value creating activities within a biotechnology company, when seeking VC funding, related to the composition of the team. Furthermore, the CEO and management were emphasized as key components to make sure the activities are in line with the evaluation criteria which VC funds seek. A few trade offs were highlighted for the ability to balance company activities, where balancing activities related to product versus market were discussed. Although the technology is critical for the company to exist, a clear market fit is a necessity for being attractive among investors. The findings from the study does not seem to indicate a common practice for how companies should focus on the technology or market. Rather it is a question of creating subjective value for a particular investor and setting.
Appendix A

Inductive Analysis
## A.1 Interview results for the team criteria

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Composition</strong></td>
<td>Diversity</td>
<td>The founder is a key person</td>
</tr>
<tr>
<td></td>
<td>Role of founder and CEO</td>
<td>Backed up by technology leaders</td>
</tr>
<tr>
<td></td>
<td>VC can supplement and develop teams</td>
<td>Diverse team</td>
</tr>
<tr>
<td></td>
<td>Team important, but can and will be replaced</td>
<td>Build networks, and assure the quality of these</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Complete team with multiple characteristics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management experience essential for pre-clinical studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>VC invest in CEO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Team is a risk factor</td>
</tr>
<tr>
<td><strong>Skills and experience</strong></td>
<td>Team has brought project forward previously</td>
<td>Operational and regulatory</td>
</tr>
<tr>
<td></td>
<td>Diverse skills and experiences in team</td>
<td>Professors and owners should be less involved in driving the project.</td>
</tr>
<tr>
<td></td>
<td>Scientific merits</td>
<td>Ownership and involvement of professors and founders should be determined.</td>
</tr>
<tr>
<td></td>
<td>Reputations of team</td>
<td>Drive a project forward</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Business acumen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long term thinking</td>
</tr>
<tr>
<td><strong>Personality &amp; dynamics</strong></td>
<td>Team gets along well</td>
<td>Credibility and trust</td>
</tr>
<tr>
<td></td>
<td>Likable and empowering CEO</td>
<td></td>
</tr>
<tr>
<td><strong>Team awareness</strong></td>
<td>Aware of what you have and need</td>
<td>What you have and what you need</td>
</tr>
<tr>
<td></td>
<td>Risk awareness</td>
<td>How to supplement CEO</td>
</tr>
<tr>
<td></td>
<td>Flexibility in strategy</td>
<td>Flexibility in strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Realistic view on skills</td>
</tr>
<tr>
<td><strong>International elements</strong></td>
<td>International background and experience</td>
<td>International experience of team</td>
</tr>
<tr>
<td></td>
<td>Language skills</td>
<td>Swedish human capital</td>
</tr>
</tbody>
</table>
## A.2 Interview results for the product criteria

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>General contributions</td>
<td>Most significant Subjectivity in product category</td>
<td></td>
</tr>
<tr>
<td>Research design</td>
<td>Scope of studies Quality assessment of design: experience of team</td>
<td>Utilize flexibility in trial design Carefully evaluate reformulations of trials</td>
</tr>
<tr>
<td>Data</td>
<td>Data collection Data quality: validity and team experience Mechanism of Action</td>
<td>Most significant Be transparent with results</td>
</tr>
<tr>
<td>Innovation height</td>
<td>Work on averages Product Threats Focus strategy</td>
<td>Focus strategy Be ahead of competition</td>
</tr>
<tr>
<td>IP</td>
<td>Checkmark: company or not End customer and IP: geographical considerations and big pharma IP consultants</td>
<td>Firm and solid IP Second opinion upon evaluation</td>
</tr>
<tr>
<td>Communication strategy</td>
<td></td>
<td>Convey tangible message Target message to investor Hierarchy in arguments</td>
</tr>
</tbody>
</table>
### A.3 Interview results for the market criteria

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>End customer focus</td>
<td>Needs among potential buyers</td>
<td>Specialized physicians, patient organisations, corporate pharmaceutical companies</td>
</tr>
<tr>
<td></td>
<td>Geographical diversity</td>
<td>Meet a medical need</td>
</tr>
<tr>
<td>Commercial fit</td>
<td>Focus strategy: know your fit</td>
<td>Know your fit</td>
</tr>
<tr>
<td></td>
<td>Work backwards</td>
<td>Jump on trend</td>
</tr>
<tr>
<td></td>
<td>Do not jump on trend</td>
<td>Predict future trends</td>
</tr>
<tr>
<td></td>
<td>Predict future trends</td>
<td>Clear gap in market</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Work backwards</td>
</tr>
<tr>
<td>Market size</td>
<td>Patient fit</td>
<td>Competition</td>
</tr>
<tr>
<td></td>
<td>It is a question of market fit rather than market size</td>
<td>Market reach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Use databases and services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focused patient group</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Size does not have to be big</td>
</tr>
<tr>
<td>Market value</td>
<td>Novelty versus benefit over competitors</td>
<td>Realistic estimates and dynamic market conditions</td>
</tr>
<tr>
<td></td>
<td>Price and health-economy</td>
<td>Price and health-economy</td>
</tr>
</tbody>
</table>
## A.4 Interview results for the finance criteria

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>General contributions</td>
<td>Consider the entire picture: activities, current and future financial needs</td>
<td></td>
</tr>
<tr>
<td><strong>ROI</strong></td>
<td>Key aspect</td>
<td>Difficult to discuss return</td>
</tr>
<tr>
<td></td>
<td>Difficult to discuss return</td>
<td>Ownership conflicts</td>
</tr>
<tr>
<td></td>
<td>Hurdle rates</td>
<td>Geography and company value</td>
</tr>
<tr>
<td></td>
<td>Find frame of reference for valuation</td>
<td>Assessment can be done by talking to key opinion leaders</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biotechnology companies overestimate company value, while VC investors tend to underestimate company value.</td>
</tr>
<tr>
<td><strong>Exit strategy</strong></td>
<td>Think about it, commit to it</td>
<td>Clear exit strategy</td>
</tr>
<tr>
<td></td>
<td>Detailed exit plan</td>
<td>Align vision of company with investors</td>
</tr>
<tr>
<td></td>
<td>Be flexible in your plan</td>
<td>Investors want to see the exit</td>
</tr>
<tr>
<td></td>
<td>There will always be slip in plan</td>
<td></td>
</tr>
<tr>
<td><strong>Risk</strong></td>
<td>High uncertainty, long time to market</td>
<td>Plan for your investments</td>
</tr>
<tr>
<td></td>
<td>Would you risk your own money</td>
<td>Be transparent and honest about your costs</td>
</tr>
<tr>
<td></td>
<td>Experienced management</td>
<td>Focused product strategy to lower risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emphasize below average risk</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understand the risk-failure relation</td>
</tr>
<tr>
<td><strong>Financial syndication</strong></td>
<td>Consider next round investments - arguments</td>
<td>Next rounds of financing</td>
</tr>
<tr>
<td></td>
<td>Financial syndicates</td>
<td>Importance of local financing</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Financial syndication: co-investors should be in similar stages of investing</td>
</tr>
</tbody>
</table>
## A.5 Interview results for the knowledge networks criteria

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research alliances</td>
<td>Shows involvement in market</td>
<td>Evaluate partners</td>
</tr>
<tr>
<td></td>
<td>Ownership and IP</td>
<td>Important when targeting international customers and stakeholders</td>
</tr>
<tr>
<td></td>
<td>Well known partners</td>
<td>Be transparent about networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Degree of openness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Larger companies might exploit information</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Focus on a few number of partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ownership share</td>
</tr>
</tbody>
</table>
## A.6 Interview results for other cross border aspects

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>General contributions</td>
<td>Criteria are the same</td>
<td>Criteria are the same All companies have to think internationally from day one Companies need to attract cross border investments</td>
</tr>
<tr>
<td>Implications of location</td>
<td>Geographical proximity National and local culture</td>
<td>It has nothing to do with location VCs tend to invest in areas with close proximity to locations.</td>
</tr>
<tr>
<td></td>
<td>Legal aspects</td>
<td>Language, national culture and company culture</td>
</tr>
<tr>
<td></td>
<td>Distance versus experience</td>
<td>Language</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Having all people the same place Have VC network in the locations where they invest Culture Legal aspects</td>
</tr>
<tr>
<td>Coping with uncertainty</td>
<td>Networks</td>
<td>Technology and market potential are most important</td>
</tr>
<tr>
<td></td>
<td>Check quality of previous projects Local co-investments Role of seed money</td>
<td>Syndication and co-investments Local investors Relation with trusted advisor in home country Biotechnology companies need to stay active</td>
</tr>
<tr>
<td>US market</td>
<td></td>
<td>Established American fund is a valuable asset American VC funds strongly driven by exit – know the expectations</td>
</tr>
<tr>
<td>Mentalities</td>
<td></td>
<td>More tough mentality when dealing with cross border investments Investors know what they want and how they want to achieve it</td>
</tr>
</tbody>
</table>
## A.7 Interview results for balancing activities

<table>
<thead>
<tr>
<th>Theme</th>
<th>Venture capital investors</th>
<th>Biotechnology representatives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communicating value</strong></td>
<td>Creating subjective value</td>
<td>Focus on communication skills to involve all stakeholders in an easy manner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Communicate what you sell</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understanding of the value addition of the company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make an interesting story for all stakeholders</td>
</tr>
<tr>
<td><strong>Team</strong></td>
<td>Management team critical</td>
<td>Partner research can help balancing activities, and IP strength.</td>
</tr>
<tr>
<td></td>
<td>The mix has to be found</td>
<td>CEO bears responsibility</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Team aspect important</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limited disagreement within company</td>
</tr>
<tr>
<td><strong>Technology or market</strong></td>
<td>Data &gt;Networks &amp; Communication</td>
<td>Make sure research move forward, and that you focus on the right activities</td>
</tr>
<tr>
<td><strong>orientation</strong></td>
<td>Be a technology leader</td>
<td>Clear development plan, from science to ROI</td>
</tr>
<tr>
<td></td>
<td>Not running an academic lab, but a company</td>
<td>Do not put too much focus on market, but consider it when communicating with investors</td>
</tr>
<tr>
<td></td>
<td>Work backwards</td>
<td>Early stages need to be focused on science, later move into business development</td>
</tr>
<tr>
<td></td>
<td>Early contact with key opinion leaders</td>
<td>Communicate with investors at early stage</td>
</tr>
<tr>
<td></td>
<td>What is good enough for technology</td>
<td>Realism about technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>In some cases, VC can see market potential, but not company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The presentation of market and vision more important now</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Do not overemphasize technology</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td></td>
<td>Trust within the company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understand risk, think towards the future and outside the box to develop trust</td>
</tr>
</tbody>
</table>
Bibliography


http://www.fass.se/LIF/futuremedicine;jsessionid=ZRWHfE?MnkVbYAjdmv96EHIVlSq2nqcywlw5DqeV4EV6gBYSmnql?534696341?0&userType=0!. 2015-02-11.


